

THE INDUSTRY'S RECOGNIZED AUTHORITY

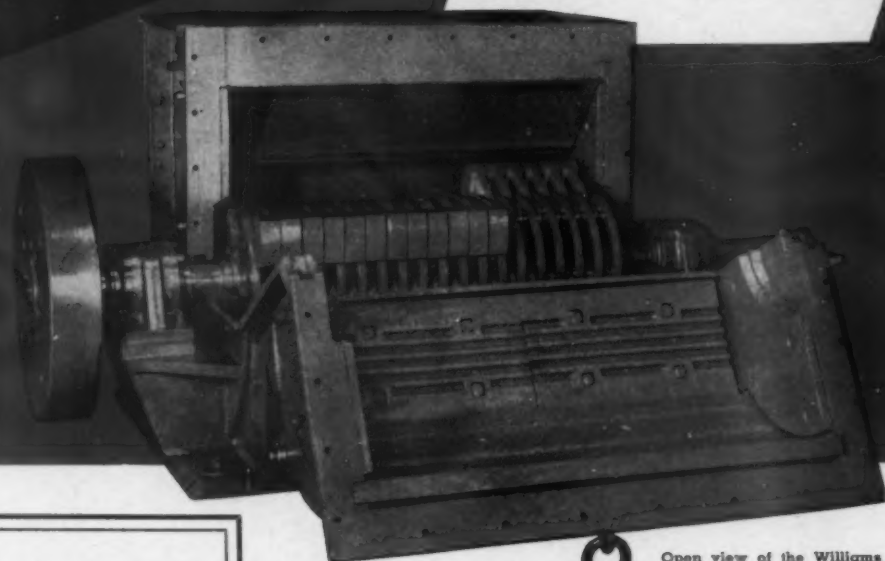
ROCK PRODUCTS

CEMENT • SAND AND GRAVEL • CRUSHED STONE • SLAG • LIME • GYPSUM
READY MIXED CONCRETE • CONCRETE PRODUCTS • INDUSTRIAL MINERALS

Beautifying An Abandoned Quarry • *September 1945*

**DESIGNED
ESPECIALLY FOR
AGSTONE**

**WILLIAMS
"NF" HAMMER
CRUSHER**



Open view of the Williams "NF" Mill showing heavy duty hammers, grinding plates, side liners and cover liners. Also shows easy accessibility to mill for repairs, etc.

FEATURES OF THE "N F"

- Adjustable grinding plate.
- Hammers adjustable to overcome wear.
- Larger capacities.
- Lifetime construction.
- 2" top liners, 1" side liners.
- Easy to work on—hinged cover.

The Williams "NF" Hammer Crusher was designed especially for reducing 4" or smaller stone to $\frac{3}{4}$ ", $\frac{1}{2}$ " or agricultural limestone. Embodies all the outstanding features Williams has developed in hammer mill design and construction and has proved itself an outstanding performer in the field.

The "NF" is built in a large range of sizes with capacities from 9 to 35 tons per hour when making agricultural limestone, affording a size mill for any job. Its principles of operation—a combination crushing and grinding—enables it to make agstone that meets rigid size specifications at a good margin of profit to producers.

"We appreciate your inquiries—write today for additional information—no obligation on your part."

**WILLIAMS PATENT CRUSHER
& PULVERIZER COMPANY**

800 ST. LOUIS AVENUE
ST. LOUIS, MO.



WILLIAMS
OLDEST AND LARGEST BUILDERS OF HAMMERMILLS IN THE WORLD
WILLIAMS
PATENT CRUSHERS GRINDERS SHREDDERS

LINK-BELT ELEVATORS and CONVEYORS

APRON • BELT • BUCKET • SCREW AND
FLIGHT TYPES

MOVE MATERIALS IN MODERN MAGNESIUM PLANT

IN these days, industry's production is figuratively on wings as products for war and civilian use pour out. So it is at the New England Lime Company's Canaan, Connecticut plant with a capacity of 15 tons of magnesium metal daily.

It is significant that, in keeping up a flow of raw materials through the crushing, calcining, and mixing stages, up to the briquetting machines, LINK-BELT Elevators and Conveyors are used throughout.

The pictures show a few of the installations. There are many others.

In your planning for tomorrow, consult Link-Belt on materials handling, preparation and power transmission machinery, to help increase production efficiency, improve quality, reduce costs. Write today!



LINK-BELT #778 continuous steel bucket elevator, 48' centers handling dolomitic limestone from gyratory crusher to screen at 80 T. P. H. Extra chute to elevator extends from a hammermill located under screen.



View under 1500-ton capacity storage bin showing minus 36 mesh dolomitic limestone being reclaimed to LINK-BELT 16' wide, 100' long belt conveyor, capacity 15 T. P. H.



LINK-BELT 9" dia. Helicoid (screw) conveyors from rotary coolers to two L-B bucket elevators, handling calcined lime. Two bottom conveyors are each 70 ft. long.



LINK-BELT 4' centers steel apron feeder under R. R. track hopper delivering coal to LINK-BELT 24" wide, belt conveyor feeding ring crusher. Capacity 25 T. P. H.

Hardenbergh Photos.

LINK-BELT COMPANY

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Minneapolis 5, San Francisco 24,
Los Angeles 33, Seattle 4, Toronto 8. Offices in principal cities.

MATERIALS HANDLING AND CONVEYOR EQUIPMENT

Engineered,
Built and Backed by

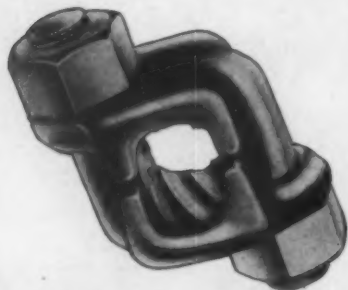


LINK-BELT

PROTECT

BETTER, PREFORMED ROPE
WITH BETTER

"FIST-GRIP" CLIPS



Cross-section views (nuts tightened to same tension by torque-indicating wrench) show—



3 WAYS "FIST-GRIP" SAFETY CLIPS SAVE

1. **They Save Skill** by eliminating difficult, expensive splicing. Foolproof... can't be applied backward or upside down.
2. **They Save Metal.** Three "Fist-Grip" Safety Clips do work of 4 ordinary U-bolts. Improved bearing surfaces provide more friction. They save rope too because they don't crush or break it.
3. **They save time.** Easy and speedy to install. Fewer needed. No special wrenches. Laughlin "Fist-Grip" Safety Clips are ideal not only for preformed wire rope but ordinary wire rope as well. The only clips with drop-forged bolts, their "Fist-Grip" is as strong as rope itself. Distributed through mill, mine and oil field supply houses. For a complete catalog on Laughlin's wire rope and chain hardware, write Dept. 4, The Thomas Laughlin Co., Portland 6, Maine.

LAUGHLIN

THE MOST COMPLETE LINE OF DROP-FORGED WIRE ROPE AND CHAIN FITTINGS



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There are men with practically every skill you could possibly want, *and we mean skill*. Those skills are good enough to lick the toughest job the world ever saw. Use them to help you lick the business problems ahead.

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heavy duty air power



all you want where you want it!

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and other
Pneumatic Tools

When you want dependable air power and plenty of it in those "hard-to-get-at" places you'll appreciate the "wallop" that's packed into a Sullivan heavy duty, two-stage portable air compressor. The Diesel-powered compressor shown, Model 365 which delivers 365 C.F.M. actual free air, provides the efficiency of two-staging, the economy of heavy duty operation and the mobility of smaller Sullivan portables.

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What Makes this
Upson-Walton Hoist Hook
a Better Hoist Hook?



UPSON-WALTON newly designed hoist hooks, unlike the old blacksmith-type round hooks, are engineered to give better service longer and sustain a much heavier safe working load. Check these specifications.

FINE GRAIN HIGHER TENSILE STEELS are used exclusively in Upson-Walton hoist hooks which are all *Drop Forged*.

ALL U-W HOIST HOOKS ARE HEAT TREATED at closely controlled temperatures to achieve greater strength, toughness and uniformity.

U-W HOOKS ARE UNIFORMLY DESIGNED WITH HEAVIER SECTIONS—another feature which permits greater safe working loads.

LARGER EYE OPENINGS give more

room for connections; because of this and the extra strength of U-W hooks, it is often possible to use a smaller hook, thereby lowering cost.

REINFORCED SECTION AT EYE CROWN helps prevent collapse, gives longer wear at point of contact with the connection.

BIGGER THROAT OPENINGS . . . EASY ENGAGEMENT—U-W hooks are designed with increased throat openings; tip contour also makes it easy to hook them on.

AS WE GO TO PRESS, DELIVERIES
ON MOST SIZES OF UPSON-WALTON
HOIST HOOKS ARE GOOD.



Established 1871

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The Upson-Walton Company

THE UPSON-WALTON COMPANY

Manufacturers of Wire Rope, Wire Rope Fittings, Tackle Blocks

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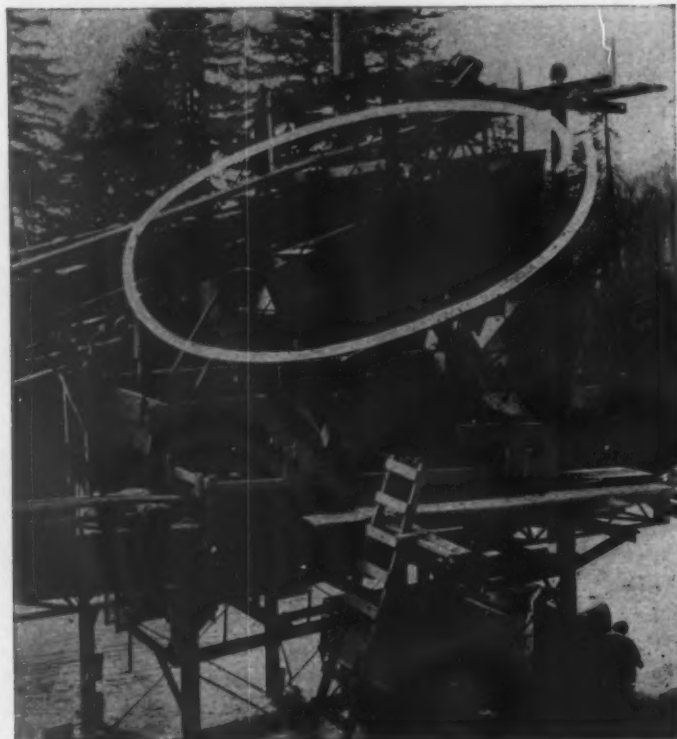
114 Broad Street
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Pittsburgh 22



Screen **MORE** Tonnages Per Day



Basically the most important thing about any vibrating screen is, "How much material will it handle in a given time?" And here as in other respects Simplicity Gyrating Screens give the outstanding performance.

Take the 4' x 12' Triple Deck Simplicity Gyrating Screen shown in the temporary plant installation at the left. It is handling 2000 tons per day of 18" and under rock. Another user reported an increase in 50% in plant capacity merely by replacing its screening unit with a Simplicity of the same size.

Nor are these isolated cases. Results like that can be shown for hundreds of installations in all types of plants, small and large alike. Such results are why you should investigate Simplicity before making your next screen installation.

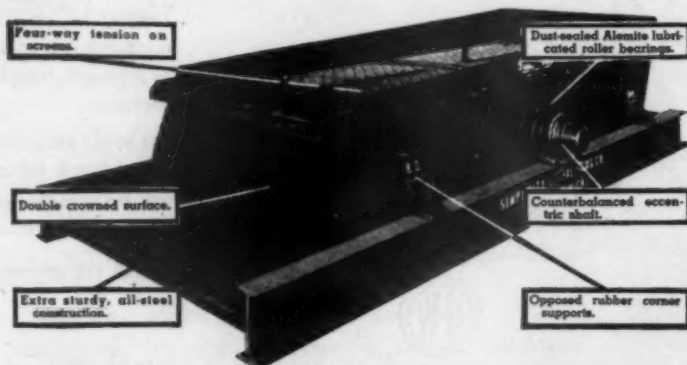
Simplicity

GYRATING SCREENS

Outstanding individual features are why user after user says Simplicity Gyrating Screens make cleaner separations to closer tolerances with very little upkeep.

Standard features include a counterbalanced eccentric shaft; rubber-mounted screen corners, screens in four-way tension over doubly crowned surface, dust sealed Alemite lubricated roller bearings; extra rugged construction; and rubber cushioned power.

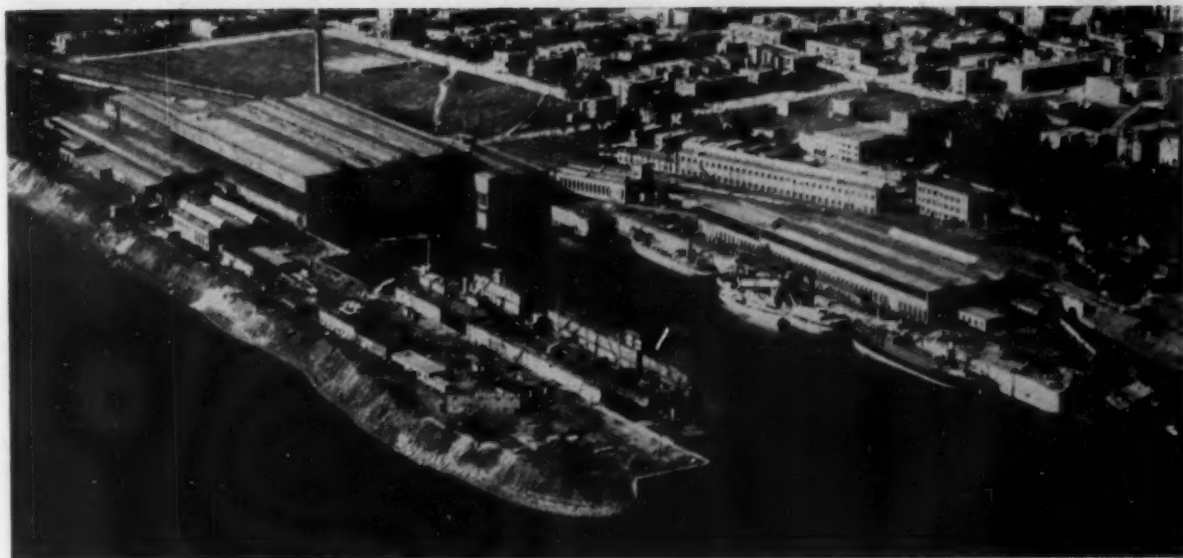
You should study these and other features in detail. Write today for a copy of Bulletin No. 37.



Simplicity

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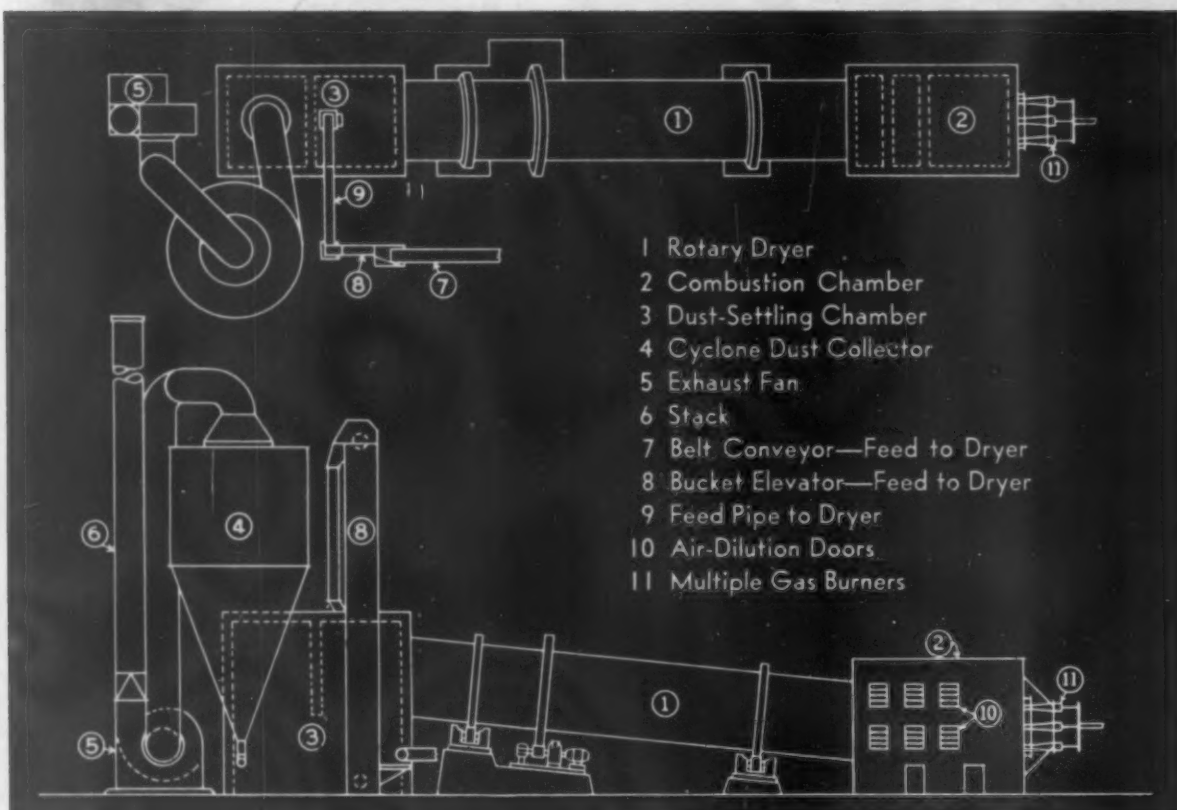
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- 4 Cyclone Dust Collector
- 5 Exhaust Fan
- 6 Stack
- 7 Belt Conveyor—Feed to Dryer
- 8 Bucket Elevator—Feed to Dryer
- 9 Feed Pipe to Dryer
- 10 Air-Dilution Doors
- 11 Multiple Gas Burners

Are You Paying Freight Charges on Water?

If you are shipping large quantities of coal, ore, or any other comparable material containing free moisture you may be overlooking an opportunity to achieve important savings. Besides cutting freight charges a Vulcan Pre-Drying Installation should also effect important economies in your smelting or calcining operations.

The diagrammatic illustration above shows a complete installation recently furnished to a large Mexican corporation for drying water-chilled blast-furnace slag preparatory to its use in the manufacture of hydraulic cement. Outstanding features in-

clude provision for delivering a large volume of hot gases to the dryer at relatively moderate temperature—which can be controlled within narrow limits—also for collecting and reclaiming the dust. Other carefully engineered features assure minimum operating expense; especially with respect to flow of material to and from the dryer.

Correspondence regarding the drying, cooling or calcining of any inorganic material is cordially invited. Estimates, constructive suggestions and preliminary designs will be furnished, as far as possible, without charge or obligation.

VULCAN IRON WORKS

Established 1848

Main Office and Works **WILKES-BARRE, PA.,** New York Office 50 Church

Rotary Kilns, Coolers and Dryers
Rotary Retorts, Calciners, Etc.
Improved Vertical Lime Kilns
Automatic Quick-Lime Hydrators

Toothed, Double-Roll Crushers
High-Speed Hammer-Type Pulverizers
Ball, Rod and Tube Mills
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Steam Locomotives
Diesel and Gasoline Locomotives
Diesel-Electric Locomotives
Electric Locomotives and Larrys



STRIPPING IN A "STREAM"

*-but these tires
keep loads moving!*

HERE'S where work-tires take a daily bath and beating — and come back for more.

On the Wade and Richey Company's coal-stripping job in Alabama, seven trucks like the one above — all equipped with Goodyear Hard

Rock Lug tires — haul away the coal. But a perverse creek nearby puts much of the area under several feet of water. So loads must be pulled through sticky mud and slime — often over sub-

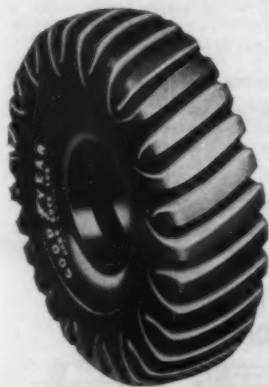
merged and murderous rocks, shale, sharp stones.

Yet these Goodyears — all veterans of many months of rough and rugged service at various ore and quarry operations before their transfer here — are delivering top-notch performance on this tire-killing job because they're built tough for tough going, have the stamina to take long punishment.

The other Goodyear off-the-road tires, too, are job-proved, high-hour performers — the great Sure-Grip with *open center* tread for drive wheels where traction counts most, and the time-proved All-Weather Earth Mover for drawn vehicles where easy rolling is a must.

And because these tough work tires consistently deliver lower costs-per-ton-mile, more and more contractors now buy Goodyears for their units. Chances are you will, too, once you get the story from men now using them.

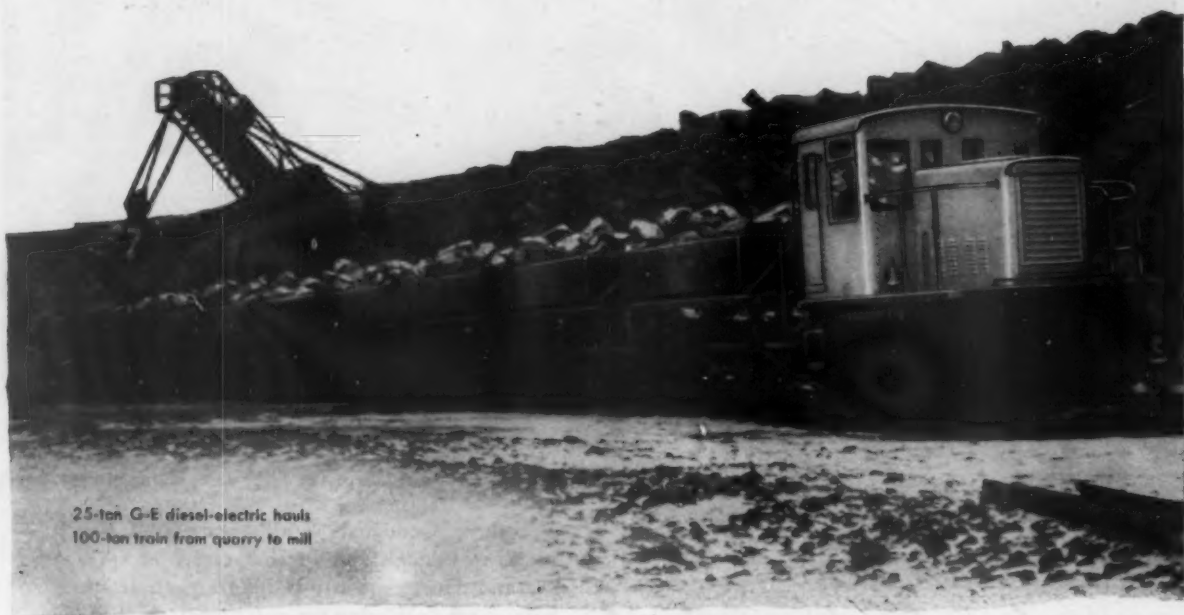
Sure-Grip, All-Weather—T.M.'s The Goodyear T. & R. Co.



GOOD YEAR

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

"...most satisfactory of motive power for



25-ton G-E diesel-electric hauls
100-ton train from quarry to mill



**diesel-electric
INDUSTRIAL
LOCOMOTIVES**

WHY IT PAYS TO USE DIESEL-ELECTRICS

AVAILABILITY—90 PER CENT UP

The diesel-electric carries sufficient fuel for several days' operation, runs for long intervals between overhauls, and requires only periodic inspections.

ALWAYS READY TO GO

The diesel-electric starts on the press of a button. No unproductive time is taken to get the locomotive ready for work.

FUEL COSTS LOW

The diesel-electric's high efficiency allows it to operate on a fuel cost that is only a fraction of that of a

steam locomotive. Moreover, you don't have to keep the engine running to "keep up steam."

ONE-MAN OPERATION

The diesel-electric needs only a one-man crew, as against two usually required on a steam locomotive.

MAINTENANCE SIMPLIFIED

The diesel-electric has no boiler, firebox, or heavy reciprocating parts, thus greatly simplifying maintenance.

A HIGH-RETURN INVESTMENT

Cost records show that G-E diesel-electrics often return 20 to 30 per cent annually.

25-TON 45-TON 50-TON 65-TON 80-TON



and economical type a cement plant"

—says Walter W. Wulf,
President of Monarch Cement Co.



That's the way Monarch Cement Company, feels after four years' experience with two G-E diesel-electrics which are in quarry and mill operation at Humboldt, Kansas.

In June, 1941, the Monarch Cement Company purchased a 50-ton G-E unit to handle switching. The Humboldt plant recently completed a year's business which represented more than 7000 capacity-loaded railway cars — an average of 25 to 35 per day.

The second G-E diesel-electric, a 25-tonner, was bought in August, 1941, to operate on 36-inch-gage track, replacing a 12-ton gas-electric and two steam dinkey locomotives. This G-E 25-tonner hauls trains of ten 10-ton cars from the working end of the quarry to the mill, up a grade approximately one mile long.

Both G-E diesel-electrics have had 97 per cent availability. Impressed by this fine operating record, Mr. Wulf states, "Diesel-electrics are the most satisfactory and economical type of motive power for cement plant operation." So, naturally, when more motive power was required recently because of increasing business, a third G-E diesel-electric was purchased.

Why not have a G-E representative survey the hauling and switching requirements at your plant, to see whether you can increase your operating efficiency by the use of G-E diesel-electrics?

General Electric Company, Schenectady 5, N. Y.

Buy all the BONDS you can—
and keep all you buy

GENERAL  ELECTRIC
100-16-9075

IN YOUR IMPROVEMENTS AND PUT THESE KENNEDY FEATURES

KVS

KILNS

COOLERS

DRYERS

CRUSHERS

HAMMERMILLS

SCREENS

FEEDERS

CONVEYORS

ELEVATORS

GRINDING MILLS

CLASSIFIERS

WASHERS

DUST COLLECTORS

AIR SEPARATORS



**KENNEDY
VIBRATING SCREENS**

1. Give positive action on the screen cloth without transmitting vibration to supporting members.
2. Are made in two types and several sizes, to meet any screening requirements.
3. Use a principle of vibration that permits lower speeds for large sizes and higher speeds for small sizes.
4. Material is continually turned over when passing along the screen to give efficiency approximating 95%.

These and other advantages embodied in the construction of Kennedy Vibrating Screens assure long, low-cost service when you standardize on Kennedy.



COMPLETE CEMENT, ROCK CRUSHING, SAND
AND GRAVEL, LIME AND DOLOMITE PLANTS

Write Today —

for our catalog and description on these and other
types of KENNEDY machinery.

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EXPANSIONS

TO WORK

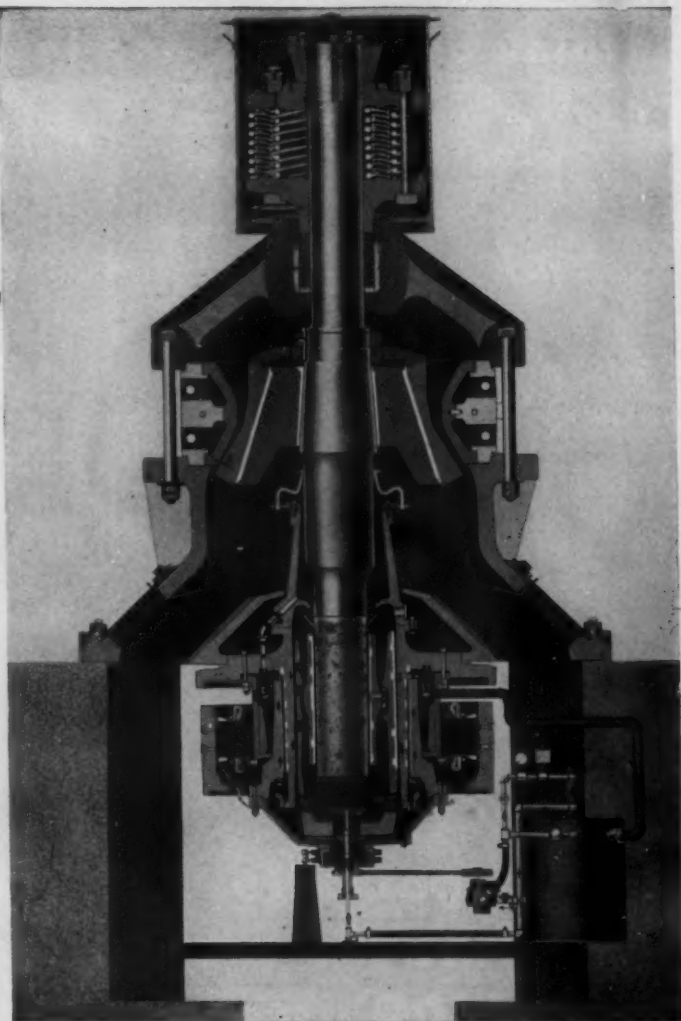
KENNEDY BALL BEARING GEARLESS CRUSHERS

Here is the gyratory crusher which, through a complete unitized design, cuts maintenance costs up to 80% and power requirements in half.

The key to their greater efficiency is in the motor drive assembly which is built in the crusher pulley. A 250% starting torque and a 300% pullout torque enables starting when the crusher is full of stone. The motor, being built in the pulley, adds additional weight to the pulley, and the pulley in turn acts like a fly-wheel by building up kinetic energy and assisting the motor over the peaks.

This simple, direct and positive application is available in a short shaft standard crusher for primary reduction and in a low head type for fine reduction. Both feature force feed lubrication, as shown in red in the illustration at the right.

For more tonnage per horsepower make your next crusher a Kennedy.



KENNEDY ROTARY KILNS

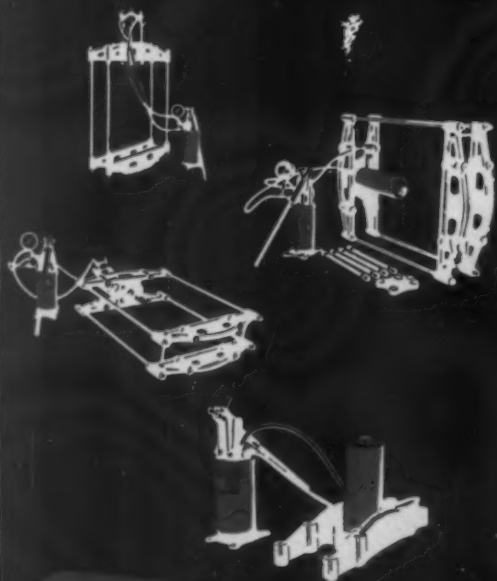
Diversified experience goes into the design and fabrication of Kennedy rotary kilns. The unit shown below is a Kennedy 10'x9'x250' rotary kiln mounted on four riding rings. Kilns are of all-welded steel construction and are driven through a totally enclosed herringbone gear reducer.

All materials are especially selected to suit the work for which they are intended. All wearing parts are carefully machined to ensure true-fit and best operation.



2 PARK AVENUE • NEW YORK 16, N. Y. FACTORY: DANVILLE, PA.

think of the time and labor you can save...



with this Rodgers
**portable
hydraulic press
of 100 uses...**

Here is the handiest time-and-trouble-saving piece of equipment you can have around for maintenance, service and special jobs—any place that you may need 50 to 200 tons of easily portable hydraulic power.

The Rodgers Universal Press is the ideal answer for pulling gears, pinions and wheels; for pressing shafts, bushings and pins; for clamping and jacking operations. It is used on a stand as an ordinary press, or on its side horizontally. Tie rods are quickly disassembled to fit the press around a large piece of equipment and they may be lengthened with extension rods. Frame may be used in full or narrow width—cylinder alloy steel assures great strength for safety and ruggedness. Power is supplied by either the Rodgers 4-speed Hand Pump or power-operated pump unit.

A Rodgers Universal will pay for itself over and over in the time and labor it will save you—we believe you will find it almost indispensable. Write now and let us send you all of the facts,

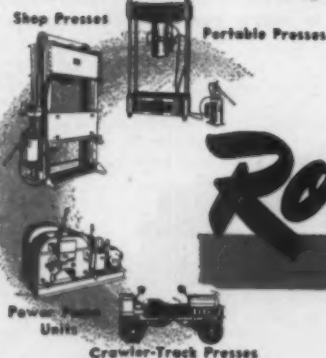
Send for this interesting booklet...

It will give you complete information and details about Rodgers Hydraulic Presses. No obligation, of course, and you can profit by it.



Rodgers Hydraulic, Inc.
hydraulic power equipment

7451 Walker St., St. Louis Park, Minneapolis 16, Minn.





**64 PAGES OF UP-TO-DATE INFORMATION
IN HANDY POCKET SIZE!**

JUST OFF THE PRESS, the new revised edition of this popular Guide is chock-full of the latest facts on how to properly lubricate and maintain your vital mechanized equipment. It has been especially prepared by Gulf Lubrication Service Engineers with the sincere hope that it will prove helpful to you and your organization. It is easy to read and authentic in every detail. To get your copy of this useful book, just fill in the attached coupon.

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WHAT IS COORDINATED CONVEYOR ENGINEERING?



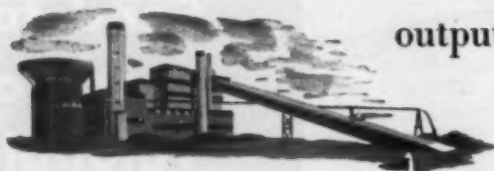
Simply this: three separate engineering staffs working as a team to provide a system of low cost haulage of coal, ore, sand, gravel and other bulk materials. These three are engineers rep-



resenting: mine or plant operators, conveyor equipment manufacturers and United States Rubber Company.

Such three-way teamwork results

in a belt conveyor which carries materials efficiently, handles

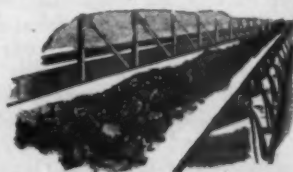


Thousands of

output at minimum cost.

U. S. Rubber Con-

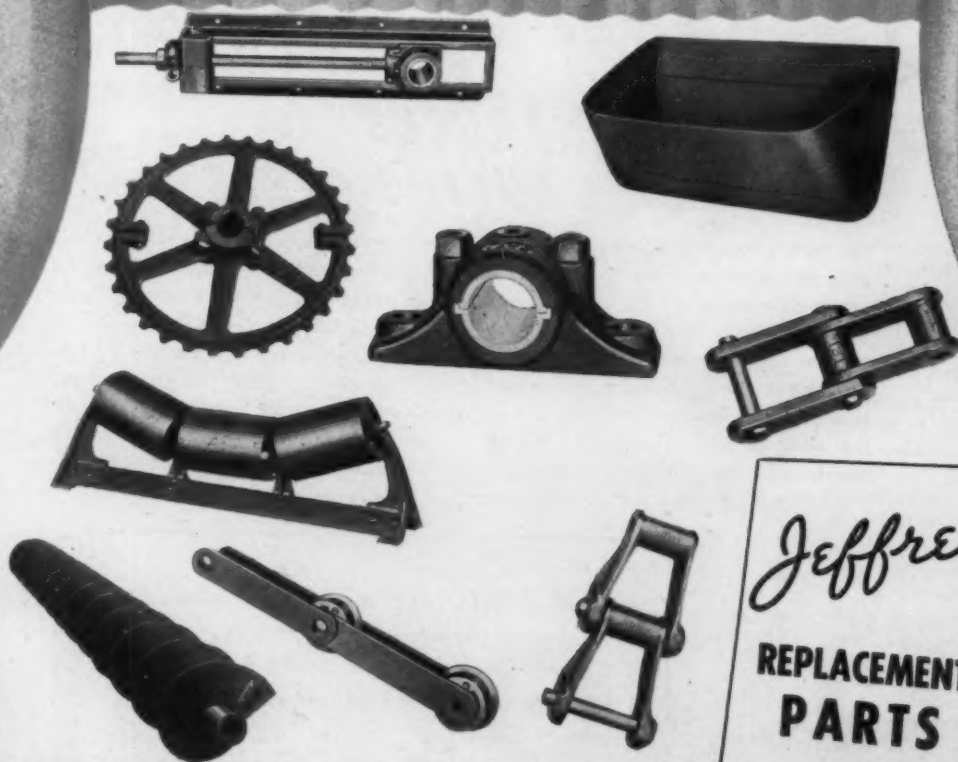
veyor Belts, designed and installed through coordinated engineering, are contributing to low cost conveying.



SERVING THROUGH SCIENCE

UNITED STATES RUBBER COMPANY

1230 SIXTH AVENUE • ROCKEFELLER CENTER • NEW YORK 20, N. Y.



Jeffrey
**REPLACEMENT
PARTS**

*Playing an
active part in*
**EVERY
STAGE
of
PRODUCTION**

Headliners of the conveyor industry. Smooth performance built right into each part . . . the same rules that govern original Jeffrey equipment. Common sense dictates "curtain calls" for Jeffrey parts when replacement becomes necessary. We show just a few . . . more are waiting in the wings.



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MANUFACTURING COMPANY

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**ESTABLISHED
1877**



BUY HEAVIER TRUCKS for LOWER HAULING COSTS

No matter how you figure it . . . initial cost; maintenance, or trade-in value . . . heavy-duty trucks are the most economical buy. Every day, more and more truckers are realizing this fact and are swinging to heavy-duty units. This is smart business because one big truck can do the work of several smaller vehicles, thereby effecting important savings.

All Ward LaFrance motor trucks are

designed, engineered, and manufactured for heavy-duty service. They are big trucks with pay load capacity ranging up to thirty tons, and they're built to take a beating and still stay on the job. For complete information about these heavy-duty trucks that are setting new standards, see your local Ward LaFrance dealer. If there is no dealer in your community, write direct.

NOW AVAILABLE to civilian users . . .
a complete line of heavy-duty trucks . . . two,
four, or six wheel drive. Before you invest,
investigate the many advantages offered in
a Ward LaFrance.



WARD LAFRANCE

TRUCK DIVISION

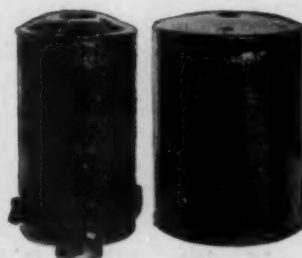
GREAT AMERICAN INDUSTRIES, INC., ELMIRA, NEW YORK

How RPM DELO OIL stops filter clogging

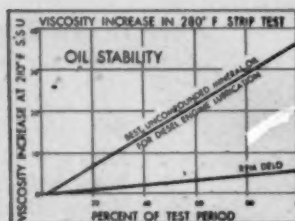


This Is How uncompounded oil clogged a regular commercial filter element after only 204 hours in a test run. The shiny sludge deposit is the result of oxidation of oil, plus iron, silica and water. In actual use, a clogged filter can result in stopped-up oil passages and excessive crankcase sludge, necessitating expensive overhauls for cleaning.

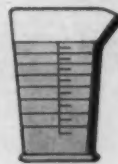
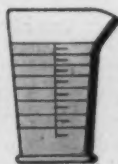
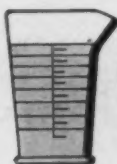
Same Type Filter from the same engine, operated on RPM DELO Diesel engine lubricating oil looked like this after 1234 hours. There is little deposit, oil flow is unimpaired. RPM DELO Oil prevents filter clogging two ways: 1. By maintaining piston rings in free working condition. 2. By minimizing oxidation of oil itself.



Powerful Anti-Oxidant effects of compounding material in RPM DELO Oil are graphically illustrated by cleanliness of this filter after 500-hour test under heavy duty conditions. Inherent stability of selected base stocks in RPM DELO Oil, plus detergent compounds assure minimum engine deposits, prevention of many costly shutdowns.



How RPM DELO Oil resists oxidation far more effectively than other oils is shown in this chart. Results were based upon increase of viscosity during severe laboratory tests. Write Dept. T-X, Standard of California, San Francisco 20, Calif., for more technical information on RPM DELO Diesel Engine Lubricating Oil.



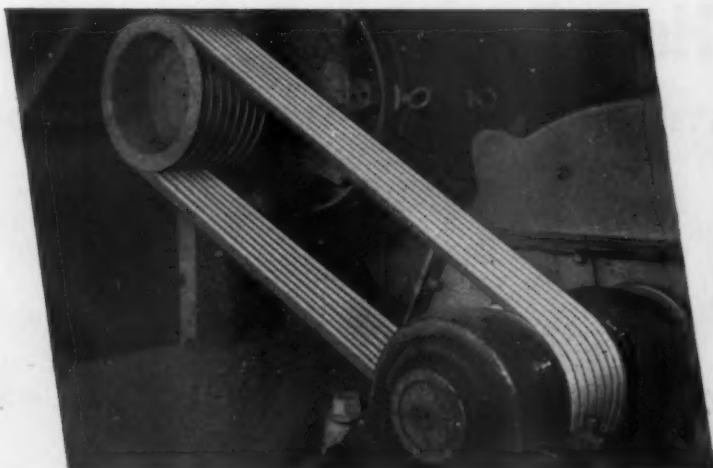
Detergent compound to clean engine.

Anti-oxidant to prevent gum and sludge.

Wear-reducing compound.

STANDARD OF CALIFORNIA

RPM DELO Oil has world-wide distribution under the names: RPM DELO, Caltex RPM DELO, Signal RPM DELO, Imperial RPM DELO (CONCENTRATES)



**No "Pre-War" Belts
EVER Gave the Service
that is**

**NOW Being Delivered by Your
Standard GATES VULCO ROPES!**



Here is the Reason:— Good belts were built before the war but none of them had the strength and durability found necessary on army tanks, tractors and self-propelled big guns. Gates developed these greatly superior V-belts for combat service—and here is why this fact is important to you **NOW**:—



Every improvement developed by Gates for U. S. combat units has been added, day by day, to the quality of the standard Gates Vulco Ropes which have been delivered to you.

Here is one rare instance in which improvements developed primarily for army combat use can be passed on to you immediately—and there are, of course, good reasons why Gates has not been called upon to withhold these important improvements from industrial V-belt users.

Efficient production in our nation's industrial plants is a prime essential to our winning of the war—and better V-belts than ever before have been urgently needed to keep machines going on the forced-draft, war production schedules that have had to be maintained 24 hours a day!

That is why Gates has been able to embody in the standard Gates Vulco Rope every V-belt improvement which Gates specialized research has developed for use on the Army's motorized equipment—and that is why you are finding that your standard Gates Vulco Ropes are today giving you better service than any V-belts that were built before the war.

All Gates V-Belts
are Built with
The Patented



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Engineering Offices and Jobber Stocks in All Large Industrial Centers

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JAW CRUSHERS



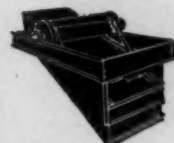
PRIMARY BREAKERS



ROLL CRUSHERS



INTERCONE CRUSHERS



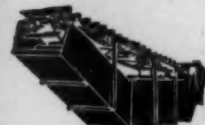
PULSATORS



SAND TANKS



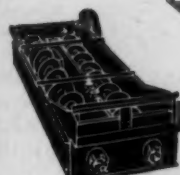
SAND CLASSIFIERS



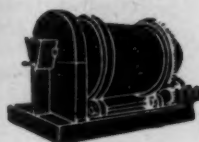
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You have to look ahead these days! Line up your equipment now . . . be all set to push your production to new peaks and bigger profits. This new 36-page illustrated equipment guide will help you . . . whether you're expanding or modernizing your present plant, or building a brand new one. It gives you the latest developments in rock, ore and gravel handling machinery. Shows you exactly how to pick the right type, model or size that will best fit your particular needs. Ask for new TelSmith Equipment Guide E-11.

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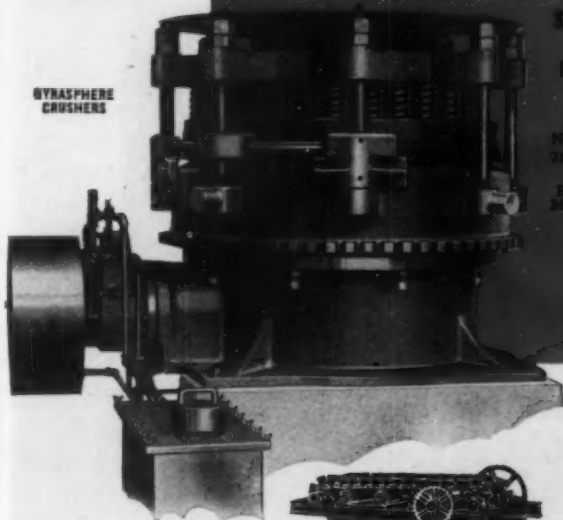


CONVEYORS

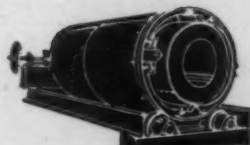


GRIZZLIES

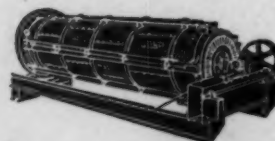
WYNASPHERE
CRUSHERS



HEAVY DUTY FEEDERS



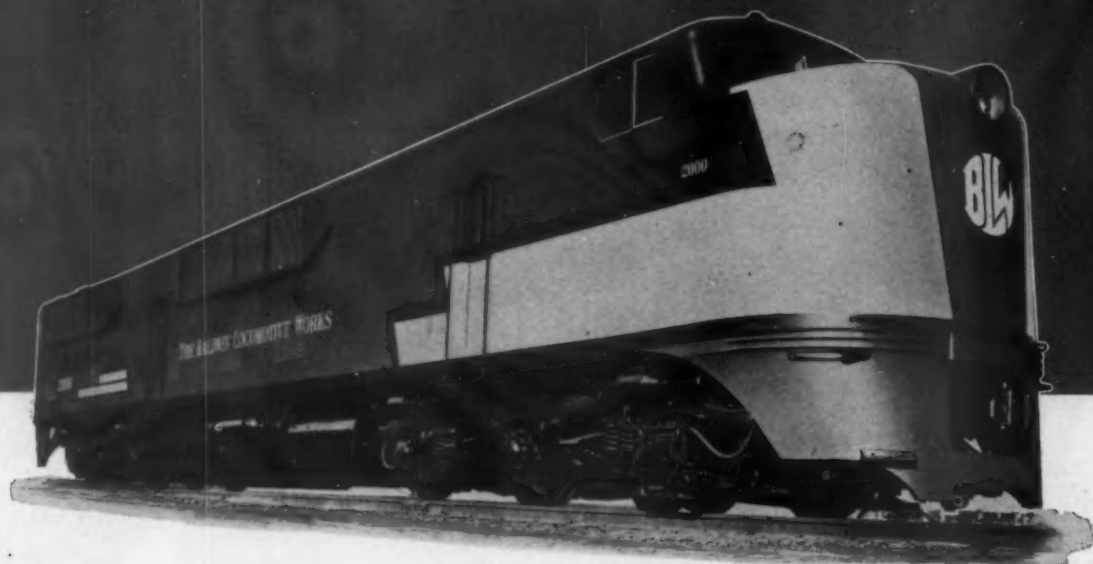
WASHING SCREENS



DRY SCREENS

E-9

Headed for a long, long run



In their first Main Line Diesel, the Baldwin Locomotive Works have incorporated their long and successful experience in building rugged, sturdy switchers powered by Baldwin-built Diesel engines.

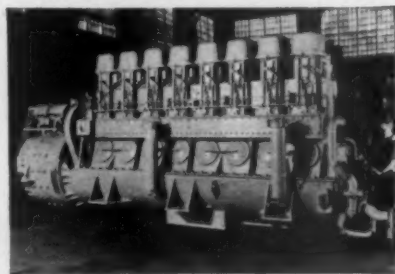
The longer life and lower maintenance costs obtained on the first liners Baldwin had processed with PORUS-KROME led them to standardize on this type of liner . . . and now every Baldwin Diesel engine coming off the production line has the greater reliability assured by PORUS-KROME. Of course, their first Main Line Diesel has PORUS-KROME applied to its liners, too, and thus it is headed for a long, long run of reliable operation.

PORUS-KROME is hard, pure chromium applied by the patented Van der Horst process. It has tiny pores and channels which serve as reservoirs for lubricating oil, feeding it back as needed. It greatly decreases the wear on bearing surfaces, and, when applied to cylinder walls, it multiplies their life 4 to 20 times . . . and the life of conventional rings 3 to 5 times.

In addition to providing a "long life" cylinder wall surface, PORUS-KROME has many diversified

applications. If you have troublesome wear problems on any parts of your machines or equipment, or are seeking a way to give your customers an added value in your products, Van der Horst engineers may be able to supply the solution for you. Write today telling us just what your problems are . . . no obligation, of course.

*Van der Horst Corporation of America, Olean, N. Y.
Plants in Olean and in Cleveland, Ohio*



Two of these 1000 hp. Baldwin Diesel-Westinghouse generator units make up the power plant of the Baldwin Main Line Diesel. Cylinder liners are PORUS-KROME processed.

PORUS - KROME



Good for the Life of your Engines

VAN DER HORST
TRADE MARK

AN AFFILIATE OF ORGESS INDUSTRIES



*For continuous,
trouble-free service*

FOR a good many years we have talked about how Jones speed reducers, gears and other transmission products have been built for long trouble-free service. Some people might have said that we placed too much emphasis on ruggedness, stamina and the ability of our products to "stand up and take it".

But today in every phase of war work, industry

is calling for products that will measure up to these standards by continuously staying on the job.

Our Bulletin No. 80 "Jones Drives for Industry" will give you a complete outline of the range of Jones speed reducers, gears and other transmission products that are built to stand the 24-hour a day drive for victory. We shall be glad to mail you a copy.

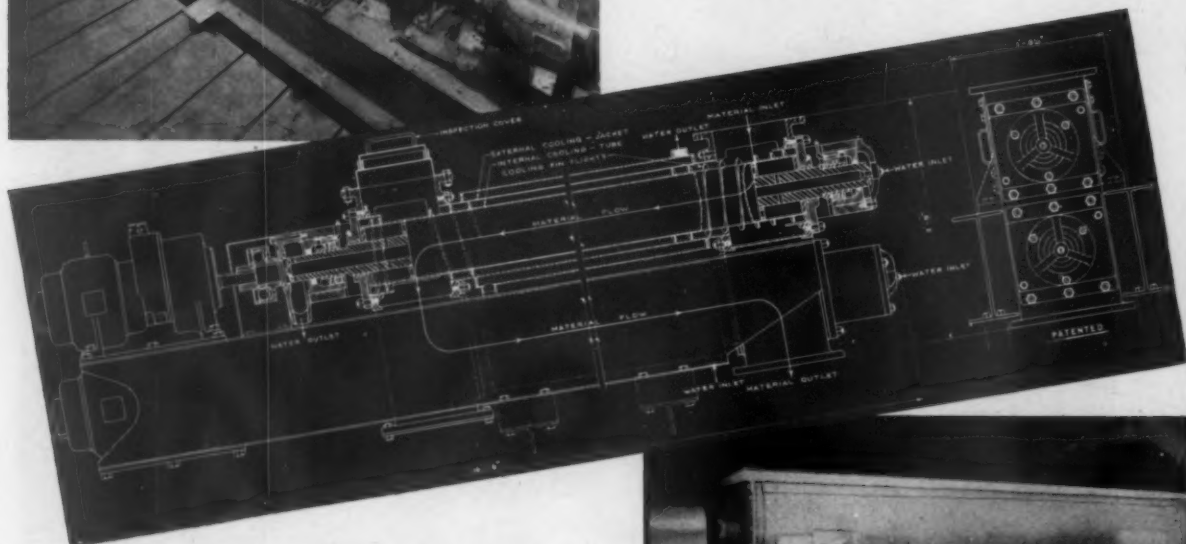
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Jones

WORMS — WORM-GEAR — GEAR — GEAR REDUCERS • GEAR
BOXES — HOLES TOOTH GEARS • FLYWHEELS • AXLES
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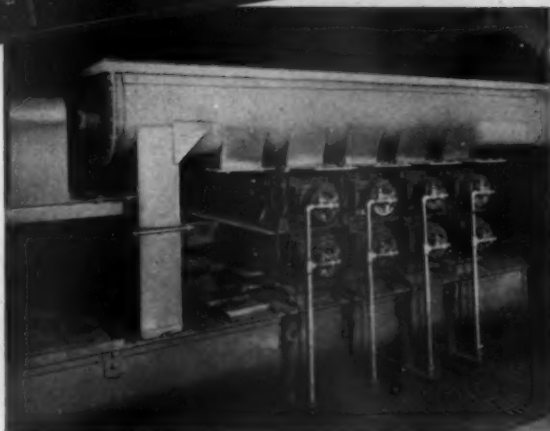


4-UNIT INSTALLATION **FULLER** DRY PULVERIZED-MATERIAL **COOLER**



The Fuller Dry Pulverized-Material Cooler can be installed under most any installation conditions, either for single or double-stage cooling, operated in parallel or in series. As many as eight have been installed as a unit.

Illustrated is a four-unit installation for cooling finished Portland cement, capacity 200 barrels per hour, single-stage cooling. Photo above shows motor end of coolers with screw conveyor which feeds material to the coolers. Cooling-water piping just below screw conveyor. Photo on right shows both feed and discharge ends of coolers, with cooling-water piping.



Bulletin PMC-1 describes and illustrates Fuller Coolers. Send for your copy today.

FULLER COMPANY, CATASAUQUA, PA.

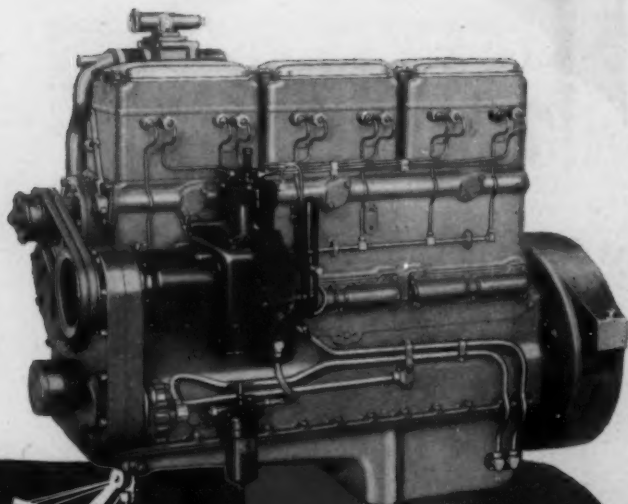
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Washington 5, D. C. • 618 Colorado Bldg.



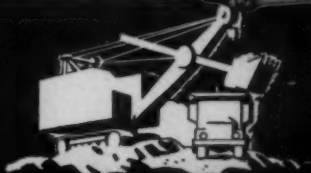
FULLER-KINYON, FULLER-FLUXO AND THE AIRVEYOR CONVEYING SYSTEMS
... ROTARY FEEDERS AND DISCHARGE GATES ... ROTARY AIR COMPRESSORS
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INDICATORS ... MOTION SAFETY SWITCH ... SLURRY VALVES ... SAMPLERS

PMC-4

Jobs for PROVED POWER are jobs for CUMMINS DIESELS



More than 90% of all the long-line, franchise-operated, heavy-duty, diesel-driven trucks now operating in the Western States are Cummins-powered.



Any list of the nation's major contractors is a list of Cummins Diesel owners. Their records prove that ... "powered by Cummins is powered for profit."



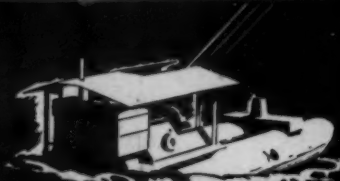
On the rich Mesabi Iron Range, more than 80% of the rubber-tired earth and ore moving equipment is powered by Cummins Dependable Diesels.



Service facilities at some 40 salt water and fresh water ports ... one more reason why so many commercial and pleasure craft are Cummins-powered.



In the vast Mid-Continent Area—the world's greatest oil producing region—Cummins Dependable Diesels power more drilling rigs than any other diesel.



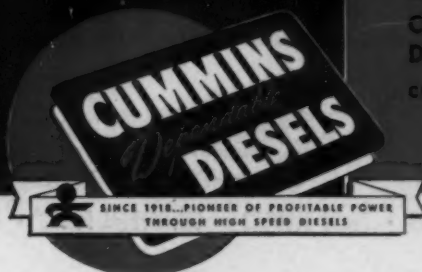
In the Northwest Woods, no single make of diesel engine powers as many yarders, loaders and heavy-duty trucks as Cummins Dependable Diesels.



Some 130 leading builders of powered equipment now offer Cummins Diesels as standard or optional original power ... proof of proved performance!

For every heavy-duty power application—automotive, portable, stationary and marine—a proved-on-the-job Cummins Dependable Diesel ... 50 to 275 hp.

CUMMINS ENGINE CO., INC.
Columbus, Indiana



We call it
"OL' MAN RIVER"



"See that FM-2 there on the hill? We call it 'Ol' Man River.' It has an X-71WD Drill on it that just 'keeps on rollin' along.' You ought to see that baby slug away! It has so much power that deep-hole drilling is almost a pleasure.

"We have hardly any trouble with stuck steels. Besides all the rotation power in the drill, there's an air motor which gives from 0 to 1000 lbs. feeding pressure. When the going gets tough, the operator just eases up on the feed and that drill sure is a work horse the way it keeps on plugging. The hole is down before you know it.

"Starting a new hole is no problem, either. The rig is easy to move and will drill at any angle so it doesn't make much difference how rough the ground is.

"I'm sure sold on it. Guess a lot of other people must be too—because all the quarries around here have FM-2's. If you want to know more about it, get an Ingersoll-Rand engineer to tell you. All I can say is that I have no trouble and my costs are lower than ever."

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S-712

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HENDY DIESELS



Series 50
Stationary Diesel

Series 20
Stationary Diesel

now available from 125 to 780 horsepower

Industrial operators are finding that in Hendy Diesels there is *more* than meets the eye. Besides their clean-cut appearance, they embody many features never before available in any one engine.

DEPENDABILITY: Unit-type fuel pumps and injectors eliminate high-pressure fuel lines and danger of air-locks. Overhead camshafts eliminate many moving parts and give quiet, reliable valve and fuel-pump action. Full pressure lubrication to moving parts assures the correct amount of oil at the right places, automatically.

ACCESSIBILITY: Fuel-transfer, lubricating-oil and cooling-water pumps, oil coolers, fuel and lube-oil filters are conveniently located and instantly accessible. Large inspection-doors, which can be removed without disturbing any other assemblies, give easy access to crankshaft and connecting-rod bearings.

LONGER LIFE: The conservative ratings and heavy-duty characteristics of these engines assure long life and smooth operation. The crankshaft, which is large and well proportioned, is supported by large, replaceable, bronze-backed bearings, all of which receive positive pressure lubrication.

GENERAL SPECIFICATIONS

SERIES 20

125 to 260 hp; 600 - 900 rpm; Air starting.

SERIES 50

350 to 780 hp; 350 - 500 rpm; Air starting; Dual intake and exhaust valves.

OPTIONAL EQUIPMENT

includes: Clutch power take-offs from either end; Engine-driven starting-air compressor; Closed-circuit cooling system.

Also available as complete generating plants.

Send coupon today for complete information and name of nearest Hendy representative. No obligation. Joshua Hendy Iron Works, Sunnyvale, California.

JOSHUA HENDY IRON WORKS
ESTABLISHED 1856
SUNNYVALE, CALIFORNIA



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Please send illustrated catalog on Hendy Diesel engines.
I am interested in engines up to 300 hp ☐; over 300
hp ☐; Diesel electric generating plants up to 225 kw ☐;
over 225 kw ☐.

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Jaw and Gyratory primary crushers and Symons Cone and Impact Crushers for fine reduction cover the entire range of crushing operations.

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Ball, tube, rod and compartment mills are offered in larger sizes — for wet and dry grinding operations.

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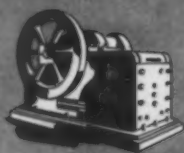
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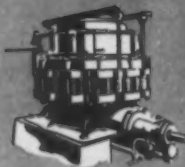
Smelting furnaces, copper converters, rotary and straight line casting machines for the metallurgical industry



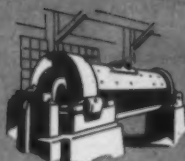
JAW CRUSHERS



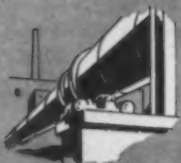
GYRATORY
CRUSHERS



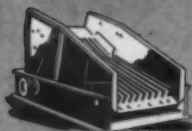
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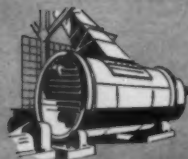
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COPPER
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When contemplating machinery for the processing of ores and minerals, whether for a new plant in the future or the modernization of an existing plant, investigate this line of machinery for process work.

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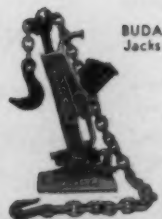
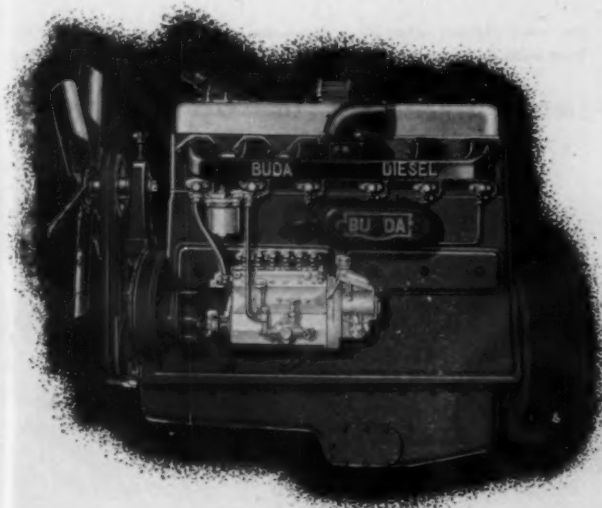
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Early model
road roller
powered by a
BUDA gasoline
engine.

since 1881

pace the progress of **Power**

Over 64 years of manufacturing experience and 35 years in the engine business is back of every engine BUDA design. Maximum power and economy are the result — and are as much ingredients of the finished product as the skill behind each accurately made part. Send for literature on BUDA engines — the most dependable power available for your job.



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No. 75

SINKER ROCK DRILL

A general purpose, medium weight machine—one of three of a series in the 56-pound class—for shaft sinking, quarrying, road building and general construction work. Designed for deep, down-hole drilling with powerful rotation, powerful hammer action and powerful help-blowing... for either wet or dry operation. Light and heavy duty drills also available in the complete Thor line.



WHAT THOR "MEASURED AIR" ECONOMY MEANS TO YOU...

Balanced Power—only a precisely measured amount of air is allowed behind the piston.

Smooth Performance—every stroke is powered by the same measured quantity of air.

Air Economy—every ounce of air provides a full measure of power for peak efficiency.

Low Maintenance Cost—there are no separate parts of the patented Thor valve to wear out or lose.

Tough, on-the-job experience proves the capacity of Thor Rock Drills to drive *more holes per man per shift*... they easily out-drill everything on the job in all types of underground and surface hard-rock operations. And, that's not all—along with extra drilling speed, Thor Rock Drills provide low air consumption, minimum vibration, and maximum economy in maintenance.

Extra powerful rotation prevents stalling even in heavy, sticky formations... full air power behind the piston gives maximum penetrating and rotating power. Thor *air economy* turns every foot of air into power that, in combination with powerful rotation, assures exceptional hole-cleaning ability and steps up the rate of penetration. *Thor drills are tops for fast, low-cost drilling.*

For more detailed information about the powerful, easy-operating Thor Rock Drills and other mining and contractors' tools, write for Catalog 42-A.

INDEPENDENT PNEUMATIC TOOL COMPANY

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New York

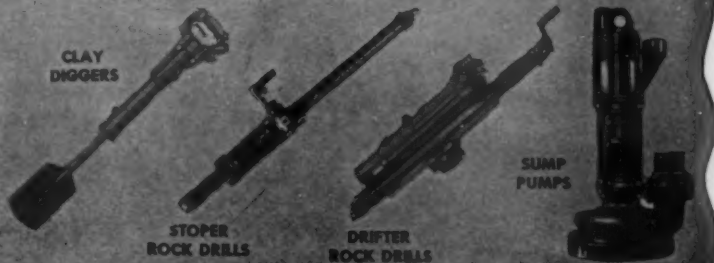
Los Angeles

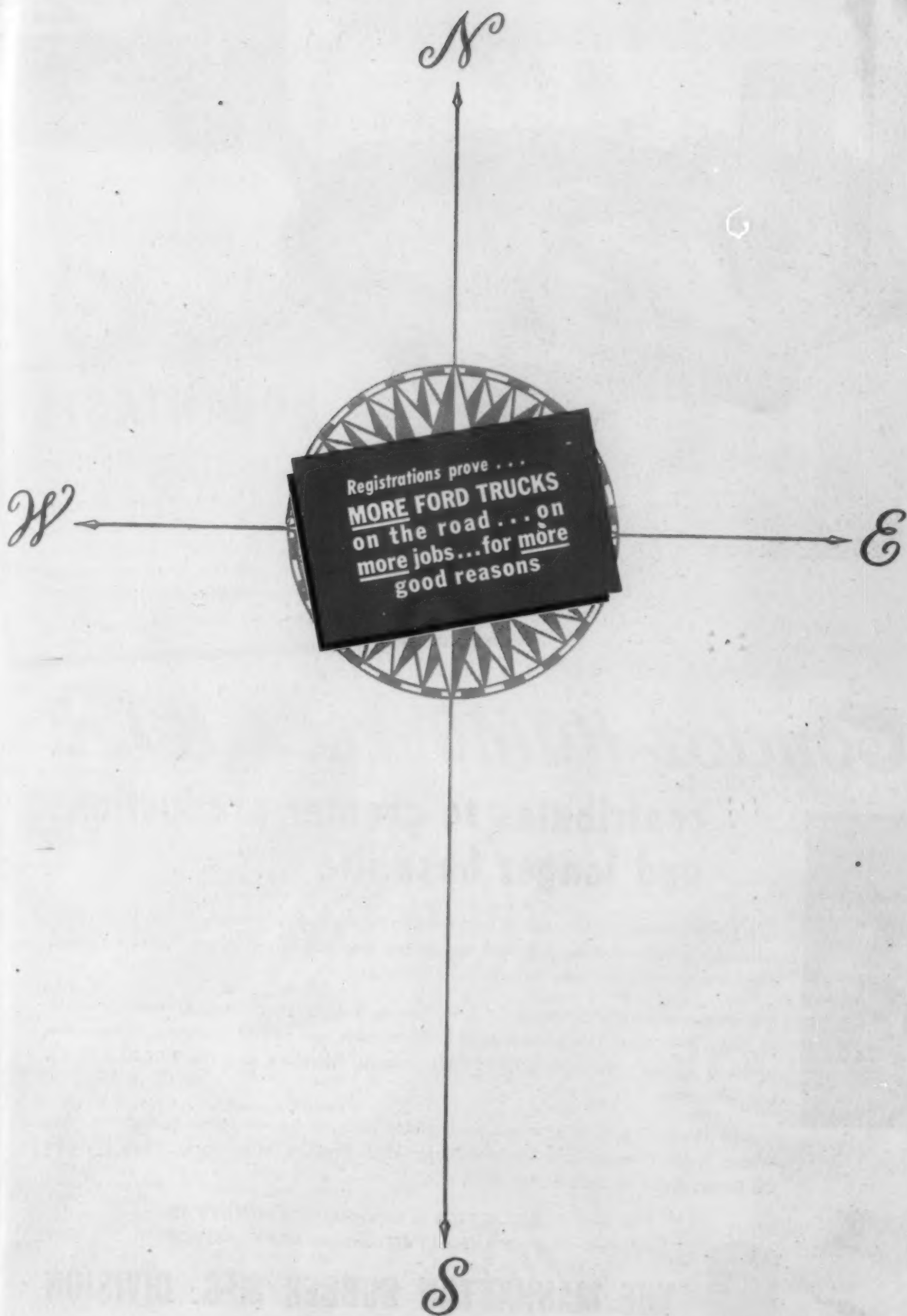


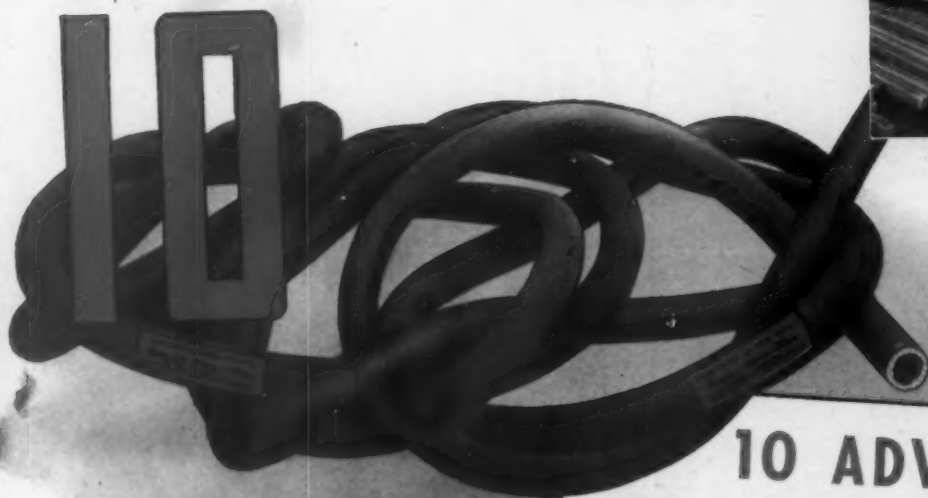
PORTABLE
Electric & Pneumatic
TOOLS

Branches in Principal Cities

OTHER THOR TOOLS FOR MINING AND CONSTRUCTION







10 ADVANTAGES

1. Extreme flexibility—easy to handle
2. Resists kinking
3. Light in weight
4. Practically inseparable cover and plies—balanced homogeneous construction
5. Withstands high pressures
6. Uniform inside diameter
7. Less elongation and expansion
8. Less fatigue to operator
9. More production
10. Lower ultimate cost

Condor HOMO-FLEX HOSE

**contributes to greater production
and longer hose life**

Every one of these 10 advantages contribute to the multiple economies of long service life; resistance to high working pressures and surges; easy handling with less operator fatigue; toughness to withstand wear, abrasion and kinking.

Still another MANHATTAN advantage—Turnate Vulcanization—imparts added strength to Homo-Flex Hose. This process gives uniform inside and outside diameters, uniform texture and resiliency to the MANHATTAN Strength Members and the FLEXLASTICS tube and cover.

Condor Homo-Flex Hose is or will be available in types for the following services: Air, Water, Steam Pressing Iron, Orchard Spray, High Pressure Mine Spray, High Pressure Oil Spray. Write for Bulletin No. 6879.

The term FLEXLASTICS is an exclusive MANHATTAN trade mark. Only MANHATTAN can make FLEXLASTICS.

THE MANHATTAN RUBBER MFG. DIVISION

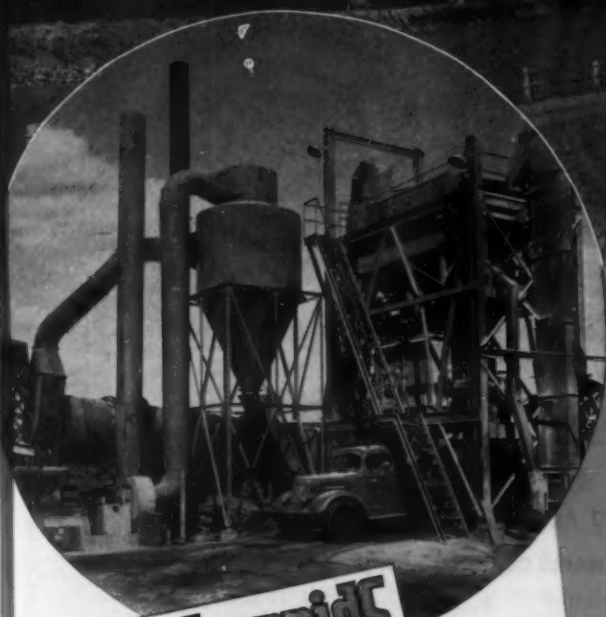
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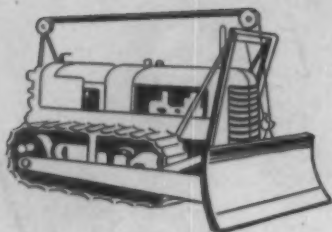
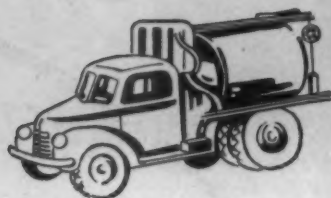
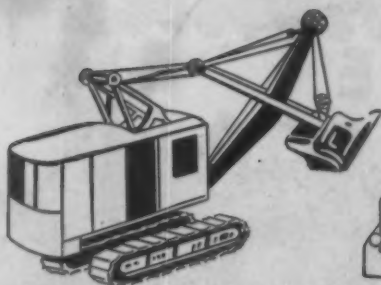
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BATCH TYPES OR CONTINUOUS MIX TYPES—all sizes are available.

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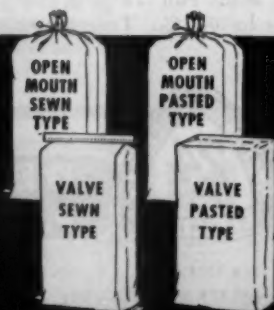
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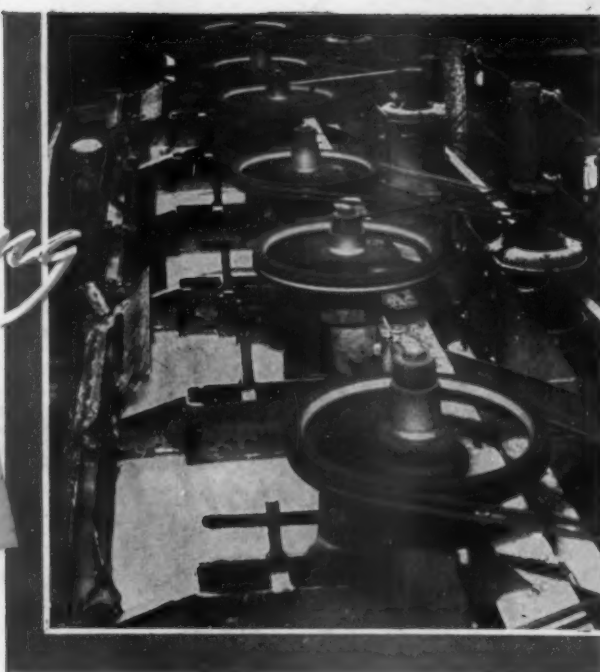
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Flotation Enables Glass Sand Company to Meet Rigid Specifications

One of the many new flotation applications is that of cleaning sand for optical, flint, container and plate glass. Standard washing processes proved inadequate for meeting the more rigid specifications adopted for glass sands. The Mid-Continent Glass Sand Company had the problem of removing small amounts of iron which had been allowable under previous specifications.

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In their present operation the flotation feed consists of approximately 19 tons dry sand per hour in a pulp of 33% solids. The sand is all minus 30 mesh and approximately 45% plus 100 mesh. The pit sands run .26% to .40% Fe_2O_3 . Tabling reduces this to .065%. Treating this table product the flota-



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This is just one of the many cases where research by industrial and chemical companies, and by Denver Equipment Test Laboratory, has resulted in use of flotation for refinements in modern processing methods (such as on talc, coal, clay, fluorspar, phosphate, graphite, bauxite, barite, sulphur, salt, potash, rubber, and grain.) Mid-Continent Glass Sand Company, like other successful companies, selected Denver "Sub-A" Flotation to assure profitable results.

Use Deco Test Service

The Denver Equipment Company has specialized for many years in developing flotation processes and manufacturing flotation equipment. Complete batch and continuous test laboratories are maintained for research on flotation applications. Submit your problems to our experienced staff of Flotation Engineers . . . take advantage, now, of this test service. Write to any one of the Deco offices listed below.



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MEXICO, D. F.: Edificio Pedro de Gante, Gante 7

TORONTO, ONTARIO: 45 Richmond Street W.
VANCOUVER, B. C.: 305 Credit Foncier Bldg.

LONDON EC4, ENG.: 14 King William Street
JOHANNESBURG, S. AFRICA: 8 Village Road
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RAYMOND

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ROLLER MILL

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The great demand for farm fertilizer puts the spotlight on the Raymond Low Side Roller Mill as an economical producer of agricultural limestone and finely pulverized phosphate rock for acidulation purposes.

It is adaptable to a wide range of materials for grinding to 100-mesh fineness and is built in sizes up to 40 tons per hour capacity. Optional features include (a) Spider Vanes on top of main shaft in the single cone separator for accelerating and controlling classification, (b) Air Drying System, as in drying and pulverizing limestone or gypsum, where 3% or 4% surface moisture can be reduced to less than 1/2 of one per cent.

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Catalogs, stating your problem

High tonnage rate per horsepower; low operating and lubricating costs; pneumatic feed control of "mill load"; easy method of fineness regulation; ability to handle materials containing surface moisture.



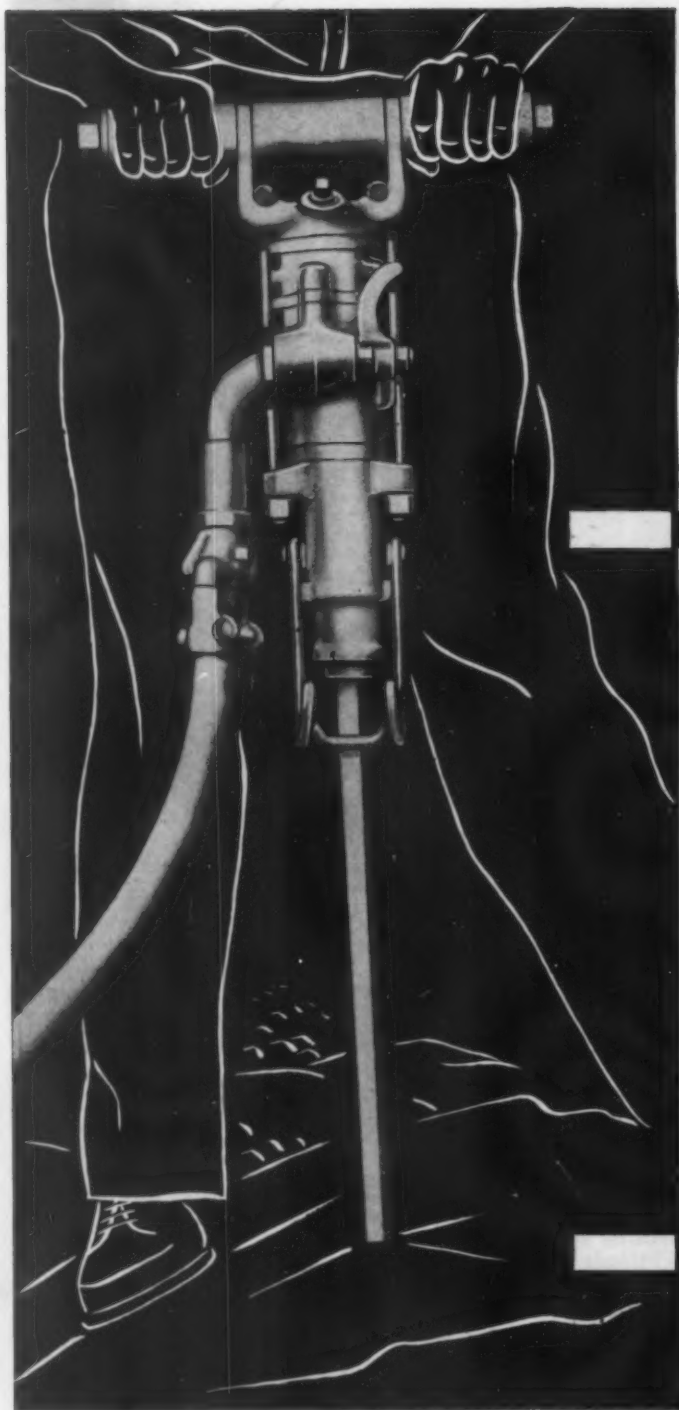
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I WANT!**

**"Why should I take unnecessary chances
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Mobile is a TRIED and PROVEN Product?"**

Ready-mixed concrete operators everywhere are playing safe by using dependable, job-tested Smith-Mobile Truck Mixers and Agitators. They KNOW Smith-Mobile fills the bill. They like its many time-saving, cost-reducing features. Backed by almost a half-century of specialized mixer building experience, Smith-Mobile is now entering its 8th year of quantity production. Instead of periodically introducing "new models", Smith has always been committed to a policy of constant improvements and refinements. That's why Smith-Mobile is today the LAST WORD in truck mixer design. Get the facts! Ask for Catalog No. 198-C.

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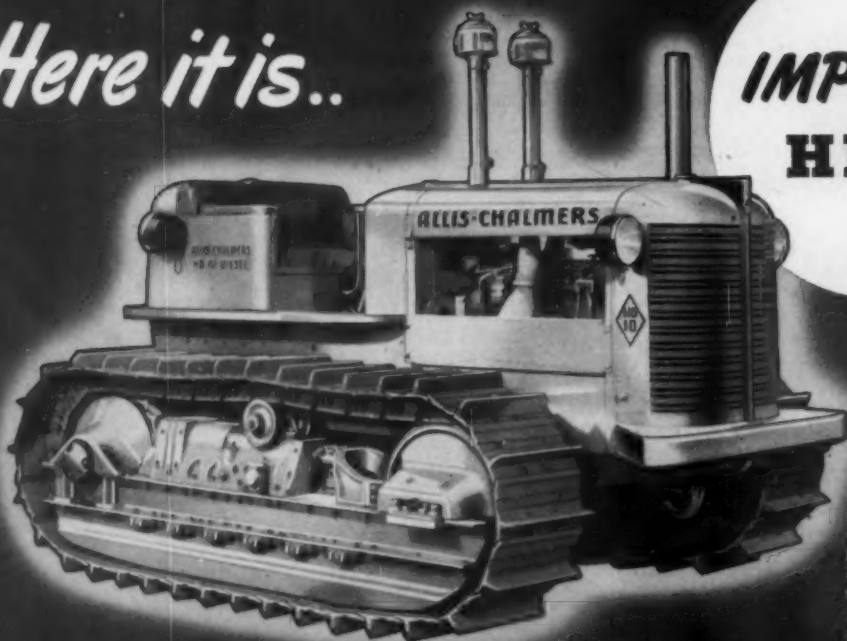
CONTROLLED DISCHARGE

Just one of Smith-Mobile's many job-tested features. The illustration above shows a Smith-Mobile discharging directly into forms. Operator is getting just what he needs for this particular job -- discharge, fast or slow, under perfect control and without segregation.



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**IMPROVED
HD-10**

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A better performer than ever with extended track! More track on the ground means greater traction—more grip, more drawbar pull! Cuts scraper loading time, speeds bulldozing and hauling work... insures better footing on every type of soil. Operators will like its smoother, easier riding. Owners will welcome increased work capacity.

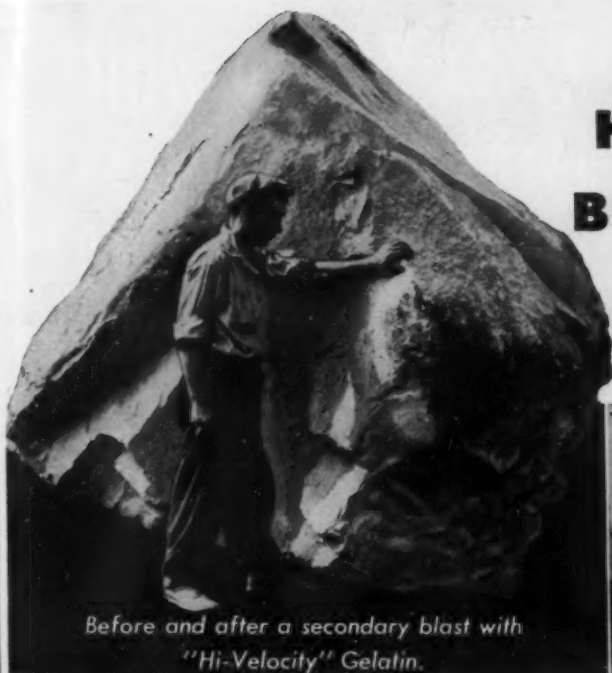
More good news... HD-10's are now more readily available to essential users. In case you have to wait temporarily... it will be well worth while waiting for the improved HD-10!

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IMPROVED TRACTION
IMPROVED BALANCE
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ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

HOW TO BREAK UP BIG BOULDERS...*easily*



Before and after a secondary blast with
"Hi-Velocity" Gelatin.



"HI-VELOCITY" GELATIN simplifies the job

For economical secondary blasting . . . turn to Du Pont "Hi-Velocity" Gelatin.

This powerful high-velocity dynamite does the job easily and quickly. It saves time, manpower and equipment.

"Hi-Velocity" saves money, too, because it always detonates at its maximum velocity; and, as a result, saves from $\frac{1}{3}$ to $\frac{1}{2}$ of the amount of explosives generally required for this type of work. Its tremendous shattering power eliminates the need of confining the charge with mud . . . completely breaks up big boulders.

Charges of "Hi-Velocity" are easily measured, $1\frac{3}{4}$ " x 8" sticks weigh a pound each.* Cutting or slicing raw dynamite is unnecessary.

Try Du Pont "Hi-Velocity" Gelatin for simplified secondary blasting. Compare results with those you

have been getting. E. I. du Pont de Nemours & Co. (Inc.), Explosives Department, Wilmington 98, Del.

*Also available in 3" cartridges of 5 lbs., 4" cartridges of 10 lbs., and 5" cartridges of 25 lbs. The 40% grade is especially recommended.

DU PONT EXPLOSIVES

BLASTING SUPPLIES AND ACCESSORIES



LIKE A CHAMPION DIVER...



FORM-SET ROPE IS *Relaxed*

In suppleness, rhythm, and grace, few sports performers can equal the well-trained diver. But this perfection is more than a matter of practice. Championship form means *relaxation*.

There's a great deal of that same relaxed quality in Form-Set—Bethlehem's preformed rope. Wire rope in the preformed construction has been relieved of many internal stresses; freed of the locked-in tension that sometimes shortens rope life.

The helical wires don't have a nervous urge to straighten themselves out. Cut a section of Form-Set rope and see what happens. *Nothing*. The wires and strands lie just as they were. They don't pop loose or "wicker."

As soon as you start rigging Form-Set, you'll notice this *relaxed* quality. Form-Set handles like a kitten—it's tractable, easy to work with. On many applications it lasts longer, too—especially where bending fatigue is a serious factor. Since it's relaxed, Form-Set bends more easily over sheaves and drums.

All grades, sizes, and types of Bethlehem rope can be obtained with the Form-Set construction. Get the full story from our nearest office or distributor.



Why a Form-Set rope is relaxed. Preforming "sets" the wires and strands in their permanent helical shape, so that they have no tendency to fly apart... even when cut or broken.

When you think WIRE ROPE... think BETHLEHEM



How 4-WAY Engineering

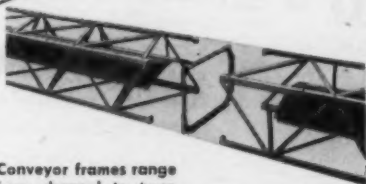
PROVIDES THE PROPER COMBINATION FOR PEAK CONVEYING EFFICIENCY



Terminals are factory assembled as units, ready for bolting to conveyor frame. Field assembly of miscellaneous pulleys, bearings, and other parts, is completely eliminated. Barber-Greene terminals are available in a wide range of types, sizes, and horsepower.



This take-up unit, for instance, is standardized in the same manner as the head-end drive. B-G pre-engineered equipment is used in some of the longest conveying systems in the world — for processing, storing and reclaiming.



Conveyor frames range from channel to truss type, in depths to meet span requirements. Lengthening a conveyor is merely a matter of adding standardized sections. Conveyor system is easily revamped — terminal units attach directly to any section.



Carriers and return rollers are properly designed to furnish maximum strength with minimum weight. All steel, jig-welded construction insures correct alignment. Choice of troughing, flat, self-aligning, or rubber impact carriers — with roller, ball or plain bearings.



1. **PRE-ENGINEERING** by Barber-Greene assures selection of the right equipment for your particular job.
2. **PRE-FABRICATION** of conveyor units saves erection time — guarantees correct assembly and belt alignment.
3. **STANDARDIZATION** permits interchangeability — makes installation, alterations and moving speedier.
4. **VARIETY OF EQUIPMENT** gives you the choice of sizes and types that best meet your requirements.

When you have a material handling problem, call in B-G engineers to help you. Barber-Greene Company, Aurora, Illinois.

Barber-Greene Constant Flow Equipment





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 IT'S **BETTER** THAN EVER
 IT'S **LAY-SET** PREFORMED I.P.S.*



LAY-SET Preformed Improved Plow Steel* has always been Hazard's highest quality rope. Now it is better than ever, because every strand is literally packed with **GREEN-LUBE**,—a superior, more adherent lubricant. This All-Green **LAY-SET** Preformed will last longer, give better service. **GREEN-LUBE** is a more costly lubricant—but not to you. It is Hazard's assurance that when you specify **LAY-SET** Preformed Improved Plow Steel you ask for the best there is in wire rope.



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 AMERICAN CHAIN & CABLE**

In Business for Your Safety

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ROCK PRODUCTS

A Glance into the Immediate Future

EVENTS are moving forward with such swiftness as the nation reconverts to a peace economy that domestic news developments become history overnight. We must therefore confine ourselves to broad considerations in our desire to comment on the industrial front after V-J Day, while Government rules and regulations are being lopped off around us like falling leaves to pave the way for the forces of free enterprise.

The Government in Washington is making it plain, by its speedy action in removing restrictions on business, that private industry is to have its inning. No more effective approach could have been taken to engender confidence throughout industry at a time when lack of faith surely would have stymied that business expansion and new enterprise which must be the foundation for prosperity and gainful employment. The psychological values are immeasurable.

The sudden capitulation of the Japanese prevented planned gradual reconversion to cushion the shock of transition from war to peace but we still are a lot better off than we were in 1918. Then, the country was still gearing for full-scale war; contracts were not being settled, production for war had not tapered off, no system for directing war workers to new jobs had been devised and we had no G.I. Bill of Rights.

Reconversion—Construction

Reconversion has come faster than prognosticators would have had us believe. An article in this issue discloses that principal manufacturers of machinery and equipment for the rock products and concrete products industries have already reconverted and their doors are open for business. They are in the second phase of readjustment; the filling of long pent-up demands, and the forces of competition are in work.

These manufacturers have thrown the challenge squarely in the laps of producers to place their orders for orderly scheduling of deliveries so that they (the producers) may do their part in speeding construction recovery. Those who scheduled priority delivery from manufacturers will benefit first. The National Gypsum Co. provided for new machinery well in advance; on August 22, the company announced that construction had started on its two million dollar gypsum wallboard plant at Baltimore, which is part of an eight and one-half million dollar expansion program.

Every company with a stake in the post-war construction program is wondering just how much there will be and how soon it will start on a considerable scale. Construction papers have been full of predictions and estimations of requirements. It begins to look as if a 20 billion dollar annual construction program will be necessary over a period of five years or more and, thanks to those who so persistently pressed

for completion of engineering design plans, there is some eight billions of dollars of construction ready for the letting of contracts. To illustrate, the Oregon State Highway Department has announced its program as 80 percent completed and that highway construction contracts to the tune of two and one-half million dollars per month are ready for letting.

A very recent estimate by H. E. Foreman, managing director of the Associated Contractors of America, that one and one-half billion dollars would go into the construction of streets and highways nationally the first post-war year provides \$138,000,000 for portland cement alone. Add to that the construction of sewer and water facilities, schools and other public buildings, private, industrial and commercial structures and hundreds of thousands of homes, and the demands for cement and aggregates will multiply far beyond pre-war normal volume. Momentum will be gained through 1946 and the boom should arrive in 1947.

There is one sour note in connection with highway construction. Diversion of highway funds amounting to over two billion dollars the past few years reminds us that the problem remains with us. The Federal-Aid Highway Act of 1944 discourages the practice, but pressure must continue to be brought to bear in the individual States to stamp out the practice.

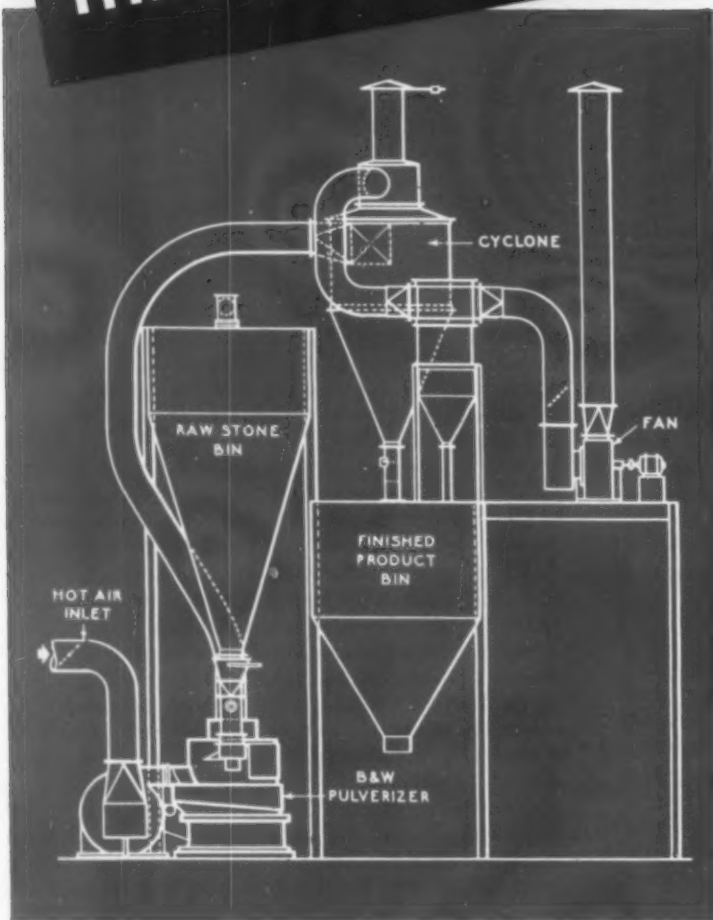
Wartime tax schedules served their purpose well until August 14 in making business unprofitable and in discouraging new ventures. In line with administrative policies to unshackle industry, pronounced reductions in corporate taxes and a severe reduction or the elimination of excess profits taxes should be anticipated.

Labor-management relations are of concern to all and the prevention of unemployment and substandard wages are effective weapons against strikes and labor unrest. Findings from the studies of guaranteed wage and employment plans and the full employment plan will have a bearing and deserve watching.

Protection or insurance of workers against depressions and long unemployment seems practicable under a guaranteed wage plan in consumer industries with minor fluctuations in production, but we have yet to be shown how wages can be guaranteed in a cyclical industry closely tied to construction. The much-discussed full employment plan which would supplement an annual national employment budget with government-sponsored work, will be given serious consideration but brings up the now time-worn controversy of planned economy versus private enterprise.

Bror Nordberg

BLUEPRINT for economical limestone grinding



B&W System for Grinding Limestone

BABCOCK & WILCOX
NEW YORK 6, N. Y.

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Substantial savings in power and maintenance can be effected in the grinding of limestone by the use of Babcock & Wilcox Pulverizers.

Material handled flows through the mill in a thin, evenly distributed layer. Fines are discharged quickly, and are prevented from accumulating and interfering with the pulverizing operation. Each ball, co-acting with the grinding ring, works effectively over its entire travel, with the grinding pressure applied directly to the material—and to the minimum amount of material at a time. Result is efficient operation at low cost for power.

The large output of the B&W Pulverizer is due to the speed with which material passes through the mill, the plurality of grinding zones, and its positive grinding action. Provision can be made for drying within the system, if desired.

Rocky's NOTES

Come All Ye Faithful!

A GROUP of aggregate producers are gathered to discuss the advisability of protesting a recent Washington bureaucrat's ruling that aggregate producers who supply materials for construction of a highway pavement or bridge, on interstate routes, are involved in interstate commerce. (By the same devious logic, it is ruled that agricultural limestone used on a field, whose crops subsequently enter interstate commerce, also is involved in interstate commerce.) Hence, although the same agency had assured these same producers ever since the federal wage and hour law was passed, that materials employed in local construction were not in interstate commerce, they must now be considered so, and if the regulation requiring a 40-hour work week with time-and-a-half for over-time was not observed, the producer is now and has been a law violator.

Probably every one of the group, composed chiefly of relatively large producers, and interstate shippers any way, is himself secure because he had of necessity observed the law or regulation. The test is then between protesting as a matter of principle vs. keeping silent as a matter of selfish satisfaction. Possibly, most of those-taking part in the debate do not see the issue as sharply as that, but to an unprejudiced observer, it seems very clear. The occasion demonstrates, as almost all critical situations do, that even intelligent men of industry are swayed in their judgments quite as much by emotion as by reason or logic.

Protest? Sure!

Reason and logic are certainly all on the side of protesting in every way, shape and manner this flagrant example of the horrors of administrative law—rule by fallible administrators vs. impersonal rule of law. It would seem only too obvious that when a relatively minor official of the federal government by changing his mind can make the producers of a basic construction material liable for millions of dollars in penalties and back wages—in general, small producers who have not a chance of raising the money, or if demanded, of staying in business—it ought to be time for all who cherish liberty of the individual to sit up and protest.

An emotion in some degree of

selfish satisfaction is on the other side; for, says the interstate shipper who has lived up to the law, these darn competitors of mine who haven't are now going to have to pay for the advantages they took of me during the last few years. Even the impartial observer has to admit there is a certain amount of poetic justice in that result. However, like our present world problem of establishing permanent international peace, the issue is much bigger than merely settling individual scores.

In this particular debate or discussion, producers are almost evenly divided. We believe this is about as good as a Gallup poll for determining the standing of business managers generally on some of the big issues of the day in business, economics and government. Not that we consider this particular issue or the circumstances of very great significance, but it does illustrate a state of mind in American business which is all important if we are to meet, and solve successfully, some of the major problems ahead.

Everyone's Problem

For ahead of business and industry is the biggest problem of reconversion to peace-time conditions ever encountered in any country. Fortunately, unlike many countries abroad, we have at home all the facilities for quick and easy reconversion. However, we do have the strongest and most aggressive and competent labor organizations in history, favored by a federal administration, which up to now has given organized labor almost all it asked for. We have the triumph of organized labor in Great Britain, whose people and institutions have had a powerful influence on American institutions since the days of first settlement on our American shores.

The next ten or a dozen years will probably show how much a socialist-inclined government in Great Britain may affect our American institutions. During those years, as never before, our American way of life will be put

to test. The keystone of our American way of life, as we understand it, is *fair play*—an opportunity for all who seek it. Obviously, it is not fair play to acquiesce in a reversal of administrative law, even though it does not affect ourself and actually hurts our competitors.

Our duty, our obligation to preserve the American way of life requires that we recognize the points at which it is in danger, and to work with our competitors, with all others in every business and industry, to fight every encroachment upon our American way of life. It is also, of course, just as much our obligation, individually and collectively, to make sure that fair play is extended to everyone who works for us, and to the public who deal with us in any way.

Big vs. Little Business

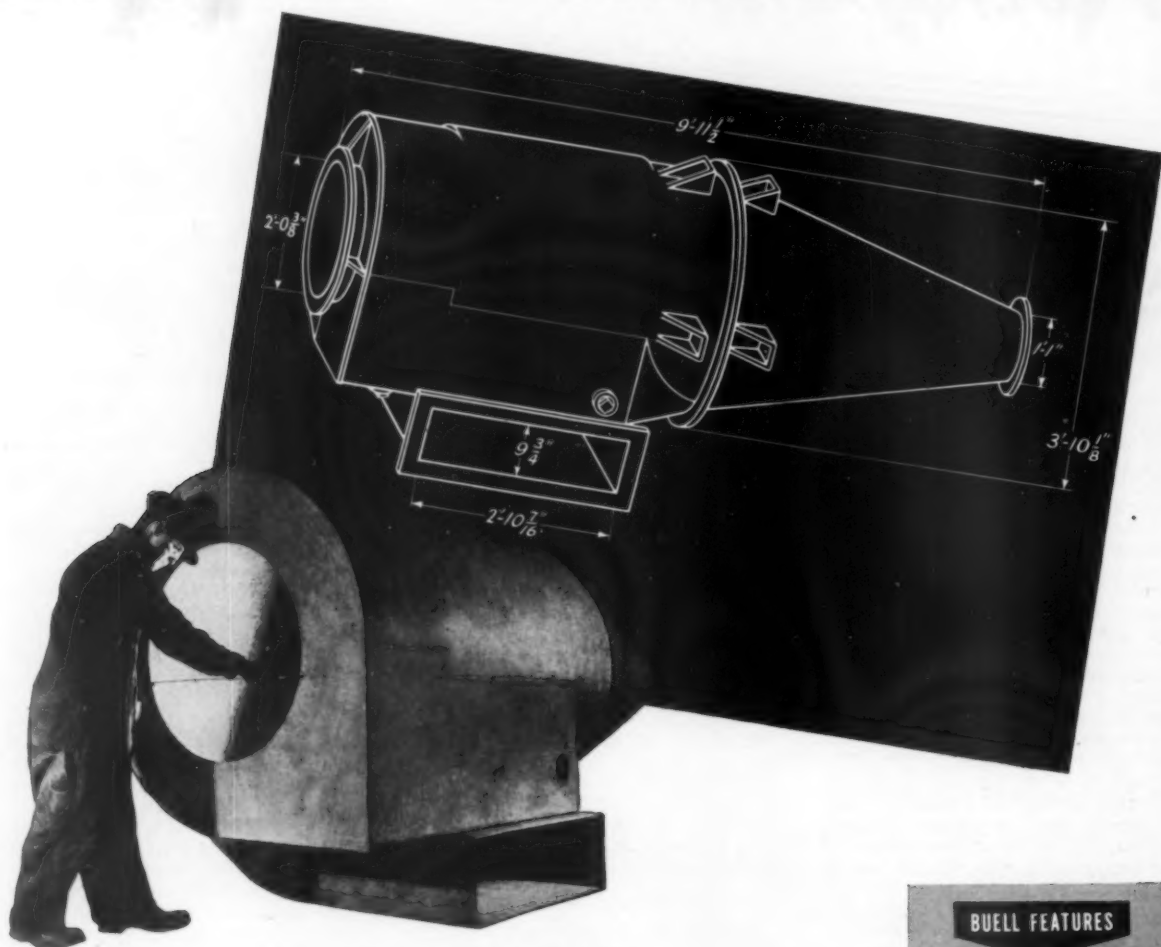
They say that big business is too often ready to needle government into acts which will embarrass its progressive small competitors; and that a government with ulterior socialistic aims encourages big business to squeeze out its smaller competitors, because it is easier for government to control or take over a few big corporations than it is many small ones. Whether these things are true or not, it seems to be almost universally accepted that the independent small business man and salaried worker, constituting the so-called middle class, the bourgeoisie, are the ones upon whom always falls the burden of keeping alive those instincts of individual liberty, which alone will save our American way of life.

These people also are always the great unorganized part of the population. Naturally, they can not organize as do labor unions, or they would soon lose that inherent sense of individuality which distinguishes them; and then they would no longer constitute the backbone of the American way of life. However, they must still learn coöperation for defense of fundamental issues; they must learn that some real sacrifice of both individual emotional satisfaction and competitive advantage are almost inevitably involved in united action for the common good of them all.

For that reason we have made more of the foregoing example than it probably deserves, because we believe it is only too typical. It illustrates that business men must recognize that probably at least half of their number remain to be converted to an understanding of fundamental issues in the great struggle we all face in a bewildered world that still places government patent-medicine type of economic remedies above healthy individual effort and industry.

Nathan C. Rockwood

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Buell's assurance of HIGH EFFICIENCY, LOW MAINTENANCE, LONG LIFE

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INNER WELDS GROUND SMOOTH

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HIGH COLLECTION EFFICIENCY
LESS FAN BLADE WEAR
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LOW POWER CONSUMPTION
HIGH TEMPERATURE RESISTANCE
UNLIMITED CAPACITY
NO MOVING PARTS
FREE DUST FLOW

PRODUCE

HIGH EFFICIENCY
LOW MAINTENANCE
LOW OPERATING COST
LONG LIFE
NO CLOGGING

DESIGNED TO DO A JOB, NOT JUST TO MEET A "SPEC"



Washington

NEWS

WITH V-J Day and its hilarious celebration now a part of history, changes involving the entire gamut of government regulations are coming so fast that what may hold for today has passed into the limbo of forgotten things by tomorrow. The War Production Board has wiped out over 210 war time controls, manpower controls have been revoked, the O.P.A. has made drastic changes, the O.D.T. has relaxed some of its prohibitions on transportation and the purchase of trucks, and war contracts involving many billions of dollars have been cancelled. Some specific details concerning these changes are given on this page.

WPB Reconversion Plan

Chairman J. A. Krug of the W.P.B. on August 15 outlined the following reconversion program:

1. All but a handful of orders will be cancelled within a few weeks.
2. Release of a huge industrial building program through a plan to relax industrial construction controls. This plan, designed to absorb the manpower and materials freed by military cutbacks is already in effect and additional relaxation will be considered within thirty days.
3. Remove ceilings on production of automobiles and other consumers durable goods. These important industries may now move forward with all-out production programs.
4. Orders controlling materials that are still in short supply, tin, crude rubber, textiles, lumber, etc., will be retained until shortages ease or until there is no longer any danger of a scramble.
5. Inventory controls will be retained until the danger of hoarding, pre-emptive buying and stockpiling by the few at the expense of the many are over.
6. Preferential protection of small business (\$50,000 or less per quarter) including the rating system will remain in effect for the time being until the effects of cutbacks can be appraised and it is safe to remove them.
7. W.P.B. will retain its powers for breaking bottlenecks or giving protection where needed to military or highly essential civilian or export needs. These powers will be used only where necessary and business should not rely on priorities help for conducting its normal activities.
8. In line with President Truman's letter to the W.P.B. Chairman, the Board will take vigorous action to expand production of materials which

are in short supply to meet civilian demands and will work with O.P.A., W.M.C. and other agencies whose operations are of equal importance to the rapid expansion of such production.

P-56 Ends September 30

The Mining Division of the W.P.B. has advised Executive Secretary V. P. Ahearn of the National Sand and Gravel Association that the War Production Board has released from all controls the acquisition of capital equipment costing more than \$500. WPB-1319 and WPB-541 applications therefore have been stopped. The 1-192 order has been cancelled and construction machinery manufacturers no longer operate under production schedules approved by W.P.B. M.R.O. quotas will continue until September 30, 1945, when P-56 will end. Until that date, producers may continue to place purchase orders with an AA-1 rating for capital equipment costing \$500 or less. Until September 30, manufacturers are required to conform with W.P.B. procedures for giving preference to purchase orders carrying priority ratings duly placed. Mr. Ahearn has suggested that producers place purchase orders with manufacturers at once for needed capital equipment costing more than \$500.

Trucks and Tires

Applications for new trucks will continue to be placed with the proper O.D.T. office; light and medium truck applications will be finally processed in the field, but applications for heavy-duty trucks, after clearance in the field, will come to O.D.T. headquarters at Washington for final processing. Certificates of War Necessity for trucks are not required. Tires will continue to be in short supply for several months, but it is expected that by the first of the year this situation should be greatly improved.

WLB Status and Wage Agreements

President Truman issued Executive Order 9599 on August 18, under which employers are free to make voluntary wage and salary increases without the approval of the War Labor Board if such increases are not used in whole or in part as a basis for seeking an increase in price ceilings. The 48-hour workweek order has been cancelled. Wage dispute cases in which the vote on the wage

issue was completed by the War Labor Board or a Board agency prior to the close of business on August 16, 1945, will be completed in terms of the policy which prevailed on the date the vote was taken, even if the directive order has not yet been transmitted to the parties. Cases in which the vote was not completed prior to August 16, will be subjected to the new wage policy in Executive Order 9599, but application of this new wage policy will not be retroactive to any date earlier than August 18. Wage and salary decreases are still prohibited except as they may be approved by the War Labor Board, and only the end of the Economic Stabilization Act can affect this situation. Executive Order 9240, or double-time order, was revoked by the President on August 21, and there is no longer any official regulation of the practices of employers with respect to pay for holidays and pay for Saturdays and Sundays as such.

Construction and Highways

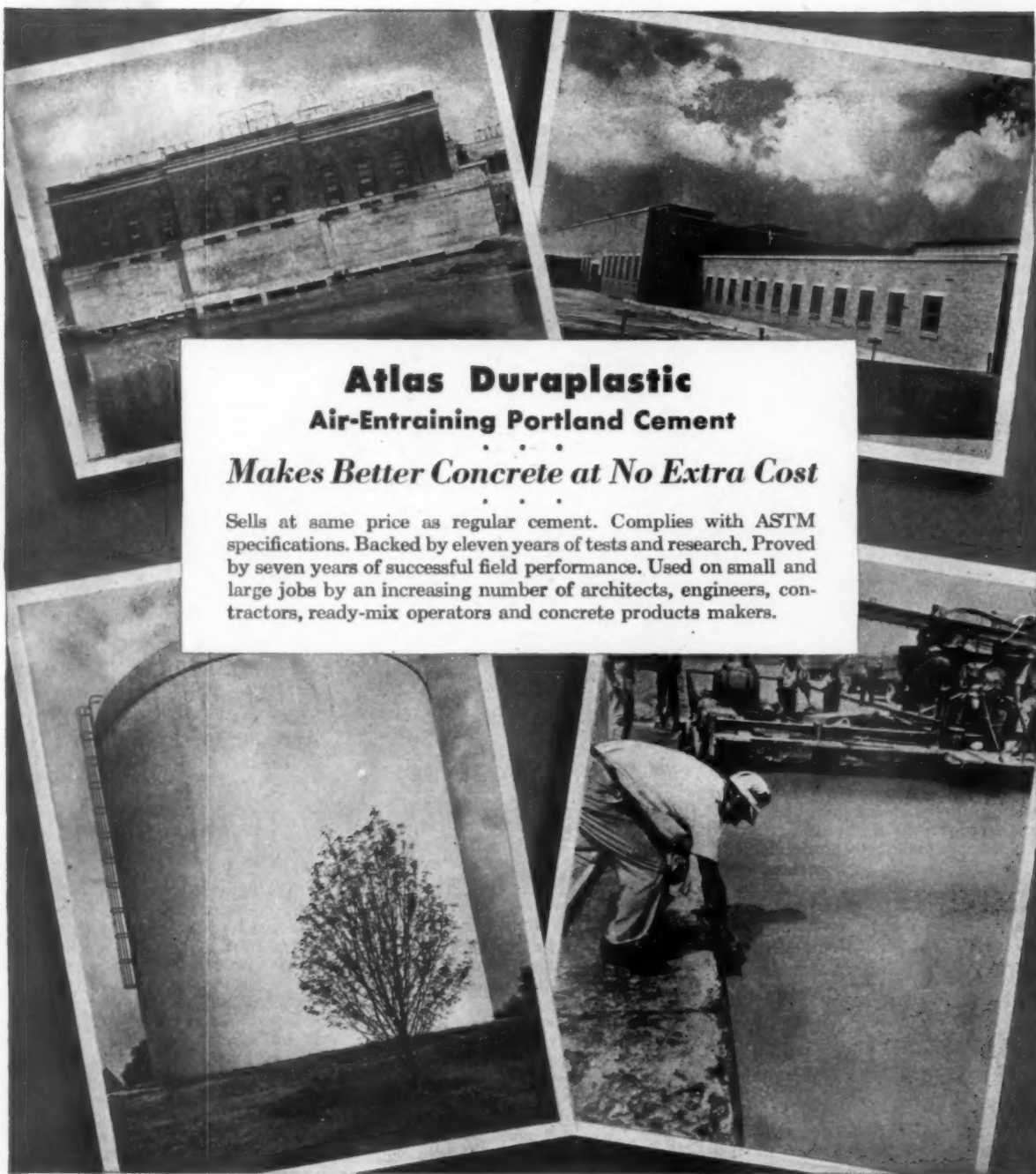
W.P.B. amended L-41, Direction 5, effective August 13, relaxing controls on industrial construction. Heretofore, expenditures were held to \$100,000 for these projects, but applications now will be received for construction up to \$1,000,000 for each project, without approval from the Washington office. Applications will be received in all regional offices of W.P.B. A 15 billion dollar construction program in the first year after V-J Day was recently predicted by Oscar L. King, director of the post-war construction committee, American Society of Civil Engineers. Legislation is now up for consideration in Congress which sets a goal of 1,250,000 new homes in each of the next 10 years by helping cities clear slums, aiding farmers to build houses, and extending existing federal housing programs. However, for the present awarding of contracts for government-financed war housing under the Federal Public Housing Authority of N.H.A. has been brought to a stop.

A nation-wide highway program is ready to be launched when Congress passes a resolution that the war emergency no longer exists. No appropriation is immediately necessary as the apportionment of Federal aid highway funds is provided for under the Federal-Aid Highway Act of 1944.

OPA Price Lid Still On

O.P.A. has announced a five-point program which may be summarized

(Continued on page 57)



Atlas Duraplastic
Air-Entraining Portland Cement

Makes Better Concrete at No Extra Cost

Sells at same price as regular cement. Complies with ASTM specifications. Backed by eleven years of tests and research. Proved by seven years of successful field performance. Used on small and large jobs by an increasing number of architects, engineers, contractors, ready-mix operators and concrete products makers.

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Makes Concrete More Durable and More Plastic

RP-D-12

the *Personal Side* of the NEWS

Resigns from WPB

CARL F. CLAUSEN, former chief of the Non-Metallics Section of the Building Materials Division of the War



Carl F. Clausen

Production Board, Washington, D. C., has resigned to return to private activity in the cement industry. C. A. WILLSON, formerly chief of the Clay and Concrete Products Section, which has been merged with the Non-Metallics Section to form the Non-Metallics Building Materials Section, has been appointed chief to succeed Mr. Clausen. Mr. Clausen went to W.P.B. in the fall of 1941 as technical consultant on portland cement and has served as chief of the Non-Metallics Section for the last two years. Before going to W.P.B. he was West Coast engineer representative of F. L. Smith & Co., New York, N. Y. Mr. Willson is an authority on concrete and the construction industry and has taken an active part in work of the American Concrete Institute. He is a member of Committee C-15, Units of Manufactured Masonry, of the American Society for Testing Materials.

On Planning Board

E. A. DUFFORD, sales manager of the Idaho Portland Cement Co., Inkom, Idaho, has been appointed a member of the new Idaho State planning board.

New Sales Manager

FLOYD T. ERICKSON, who since 1928 has been on the staff of the sales department of Consolidated Rock

Products Co., Los Angeles, Calif., has been appointed sales manager to succeed Quintin Best, who was recently elected vice-president of the company. Mr. Erickson formerly was vice-president of the C. H. Atkinson Paving Co., a large road contracting firm operating in South Dakota, Missouri and Kansas, and at one time was a salesman for the Northwestern States Portland Cement Co.

Appointed Engineer

A. HARRY WAGNER, formerly connected with the Concrete Pipe and Products Co., Inc., Richmond, Va., has been appointed engineer and sales manager of Plasticrete Corp., Hamden, Conn. Mr. Wagner previously was associated with the Portland Cement Association in Philadelphia, Penn.

C. of C. Director

F. TIP BROWN, district sales manager, Lehigh Portland Cement Co., Kansas City, Mo., has been elected a director of the Missouri Chamber of Commerce.

Permanente Promotions

WALLACE A. MARSH, chief chemist of the Permanente Cement Co., Oakland, Calif., has been made assist-



Wallace A. Marsh

ant general manager, and JAMES K. BEATTY has been named general sales manager. JACK JANSSE has been named northern California district sales manager and Festus T. McDonough, sales manager of the Southern California district. CHARLES M. CHAPMAN remains division manager of the Yosemite Cement Division at Merced, Calif.



James K. Beatty

A.S.A. Elects Officers

DANIEL HARRINGTON, chief of the Health and Safety Service, Bureau of Mines, has been re-elected chairman of the Mining Standardization Correlating Committee of the American Standards Association, and LUCIEN EATON, representing the American Mining Congress, has been re-elected vice-chairman. M. D. COOPER was named second vice-chairman and BENJAMIN F. TILLSON, WILLIAM T. DAVIS and E. A. HOLBROOK were appointed to serve as an executive committee.

55 Years of Service

JOHN G. DAVIDSON, cashier and assistant secretary of the Louisville Cement Co., Louisville, Ky., marked his 55th year of service with the cement company by being presented with a service pin at a recent dinner given by the company. Four of the other guests—Robert Hinton, foreman of the Speed power plant, with 59 years; H. Warner Overley, general auditor, with 58 years; Harry T. Regan, shovel foreman, Speed plant, with 56 years; and J. Harry Lemmon, Milltown, Ind., with 56 years—already have earned such pins. A fifth, Asbury Hendricks, machine shop foreman, Speed plant, is entitled to wear the 50-year button.

Photographs of the oldtimers and several of the company executives as they looked when Mr. Davidson went to work at the age of 16 were exhibited at the dinner, together with pictures of the plant as it looked in the 1890's. Mr. Davidson described the general office then as having no type-

writers, no comptometers—and no girls. The company, incorporated in 1866, still was shipping cement in wooden barrels—and making the barrels, he recalled, and the old Tarascon mill in Shippingport, which was converted from a flour mill in 1930, was in full operation. Originally, batches of flour and cement were rotated weekly, but this practice had been discontinued by the time Mr. Davidson joined the company.

There were no regular office hours, he said. You just worked until you were through, but strikes were unheard of. In 1890, the company's industrial activities were confined to plants at Shippingport, Speed, Ind., and Watson Junction, Ind. Today the company operates plants at Speed, Milltown, Ind., and Akron, N. Y., and ships portland cement, masonry cement, lime, crushed stone and agricultural limestone.

Veteran Advisory Boards

FRANK R. CADMAN, industrial relations manager, Warner Co., Philadelphia, Penn.; WILLIAM T. BIDDISON, assistant to J. G. Wilson at Cedar Hollow; and FRANK C. GARMAN, assistant to F. K. Wills at Van Sciver plant, are serving on Veteran Advisory Boards in their various localities. They devote a certain amount of time to help returned Servicemen with their problems pertaining to employment, endeavoring to place them in jobs suitable to their abilities and desires.

Speaks on Cement

EUGENE W. GEARY, research engineer for the Columbia Cement Division of the Pittsburgh Plate Glass Co., East Fultonham, Ohio, was the principal speaker at a recent meeting of the Exchange Club. Mr. Geary chose as his subject, "The Romance of Cement" and explained that the forces used in cement were the same as applied to the atomic bomb except that in the bomb it is a case of disintegration, while in cement it is integration. He gave an interesting talk on the history of cement, the manufacturing process and uses for cement and uses in the future.

Joins Chemical Co.

JAMES V. WINKLER, formerly in charge of experimental engineering at The Dow Chemical Co. magnesium fabrication laboratory in Bay City, Mich., has joined the Los Angeles staff as development engineer for magnesium on the West Coast.

District Manager

GEORGE CARY, senior sales representative for Johns-Manville, Inc., Milwaukee, Wis., has been appointed Milwaukee district staff manager of the company's Government department. Mr. Cary will have charge of

sales and service to Federal and State agencies in Wisconsin, Minnesota, North Dakota and the Upper Peninsula of Michigan. Until his recent promotion, Mr. Cary was senior sales representative for Johns-Manville building materials in the Twin Cities. Previous to that he held a senior sales position in the Racine-Kenosha area.

Joins Graystone

EDMUND G. LOWRY, formerly associated with a power plant engineering firm in Seattle, Wash., has joined the staff of the Graystone Concrete Products Co. Mr. Lowry will handle plant engineering problems of a mechanical nature, also the design and construction of new projects.

Concrete Pipe Manager

G. A. WAGENMAN has been named new manager for the Columbia Concrete Pipe Co., Seattle, Wash., to succeed R. M. Christensen, who has gone to Spangle as ranch and industry supervisor at the Upper Columbia Academy of the Seventh Day Adventist Church.

Women in Industry

MRS. NATHAN LANG, of the Lang Stone Quarry, Charleston, Ill., is among the increasing number of



Mrs. Nathan Lang

women active in the stone industry. Together with Mr. Lang, she handles much of the office end of the business, enabling her husband to spend more of his time in the operational part of stone production.

Appointed President

JOSEPH HARRISON CONZELMAN, vice-president of the Alabama Asphaltic Limestone Co., Birmingham, Ala., has been appointed to succeed the late Wallace L. Caldwell as president of the company. Born in Bristol, Conn., Mr. Conzelman received his academic education in Bristol Public Schools, his B.S. in Civil Engineering from Brown University and his M.A. in

Highway Engineering from Columbia University. In 1916 he accepted employment with the Pittsburgh Testing Laboratory and remained with that firm until 1922—with the exception of the year 1918, when he served as an aviation cadet in the U. S. Army. He was manager of the Birmingham office of the Pittsburgh Testing Laboratory from 1920 to 1922. The next two years he was assistant to the president of the Kentucky Rock Asphalt Co., Louisville, Ky., and from 1924-28 he was associated with the Natural Rock Asphalt Co., Owensboro, Ky. In 1928 he joined the Alabama Asphaltic Limestone Co. as general sales manager and soon became vice-president, a position he has held continuously until his present appointment as president.

Plant Manager

W. O. LAWRENCE, acting manager of the Leeds, Ala., plant of the Universal Atlas Cement Co., New York, N. Y., has been appointed manager of the plant. He has been acting manager since March, 1945, when he succeeded John P. Camm who at that time became plant manager of the Osborn, Ohio, plant. Mr. Lawrence joined Universal Atlas at Leeds in 1933, serving as operator in the burning department, laboratory technician, clerk in the operating and construction departments and as draftsman. He spent two years at the New York office as a field engineer, and returned to Leeds in 1942 as assistant plant manager.

W.L.B. Chairman

VINCENT P. AHEARN, executive secretary, National Sand and Gravel Association, Washington, D. C., has been named chairman of the industry members of the War Labor Board. He was formerly vice-chairman of industry members. Mr. Ahearn succeeds Frederick S. Fales, New Rochelle, N. Y., who resigned from the chairmanship because he will be absent from Washington for an extended period. Mr. Fales will continue, however, as an industry member of the board.

Retires

CLAYTON H. BOICE, sales manager of the Waco, Texas, office of the Universal Atlas Cement Co., New York, N. Y., has retired after 29 years of continuous service with the company. Mr. Boice joined a predecessor company of Universal Atlas in 1916 as a salesman in Nebraska, Kansas and Texas and later served as district sales manager at Kansas City. He was made district sales manager of the newly-constructed cement plant in 1930 for that territory which includes Texas, Louisiana and New Mexico, and subsequently was promoted to sales manager.

Heads Limestone Concern

EUGENE F. OLSEN, president of Stearns Mfg. Co., Inc., Adrian, Mich., has been elected a board member and also president of the Indiana Lime-



Eugene F. Olsen

stone Co., Inc., whose principal offices are in Bedford, Ind. Other board members are: Asa B. Kellogg, New York, N. Y.; Russell L. White, Indianapolis, Ind.; Hays H. Buskirk, Bloomington, Ind.; and Frank S. Whiting, Chicago, Ill.

The company is a merger made some time ago of 26 limestone quarries and mills in Lawrence and Monroe Counties of Indiana. In addition to the parent company there are the wholly-owned subsidiary companies of the Indiana Limestone Co. of New York and the Indiana Limestone Co. of California.

The company has more than a million square feet of industrial buildings and is planning a diversified post-war use of a part of this space. Among other things, the manufacture of certain types of construction equipment is contemplated. At present, the industrial facilities are devoted largely to war work.

Mr. Olsen is continuing his active direction of the Stearns Manufacturing Co., Inc., which is one of the foremost manufacturers of concrete products equipment. The plans of the two companies of which Mr. Olsen is president are such as to result in marked advantage to each company, as well as to the industries of which they are a part.

Production Manager

ROBERT W. CONDON, plant engineer for the Graystone Concrete Products Co., Seattle, Wash., has been advanced to the newly-created position

of production manager. This announcement was made by F. M. Kettenring, president of the company. Tom LaRocca, formerly timekeeper, has been appointed order clerk, and James Johnson, returned veteran, has been made timekeeper.

Standard Promotions

MARION O. KIRP, superintendent of the cement division of the Standard Portland Cement Co., Cleveland, Ohio, has been made operating assistant of the alkali division under W. G. Schmucker. G. R. DUMOND, assistant secretary, will become man-

ager of the cement division. LOUIS CREVELING, chief chemist of the plant since it started operations in 1925, has been named assistant division manager.

Changes Address

DR. F. O. ANDEREGG, consulting specialist on building materials for the John B. Pierce Foundation, New Haven, Conn., and contributing editor of ROCK PRODUCTS, has moved to Raritan, N. J. The housing research activities of the Pierce Foundation are now being concentrated in New Jersey.

Letters to the Editor

Beneficiating Glass Sand

SIR: "I am a little surprised that your editorial eye did not catch the obvious error in the article on 'Beneficiating Glass Sand' on page 58 (March, 1945, issue), where it is stated that table separation was feasible for removing limonite which had a specific gravity higher than that of sand, but that when the iron impurity was pyrite no table separation was possible because of almost identical specific gravities. From this the reader would infer that it would be impossible to separate pyrite and sand by tables. Actually such an operation is very easy and, furthermore, there is a greater difference in specific gravity between sand and pyrite (specific gravity 5) than there is between sand and limonite (specific gravity 4 or less).

"What I suspect is that some other characteristic of the ore made it difficult to remove the pyrite and easy to remove the limonite by tables. The first thought which occurred to me is that the pyrite may have been in extremely finely divided condition, which would make its separation difficult. I am a little curious to know just what was the fundamental reason, and I think perhaps many others among your readers would want to have a correction made in the statement by the author and perhaps also further explanation.

Yours sincerely,

CHARLES E. LOCKE,

Professor of Mining and Ore Dressing, Massachusetts Institute of Technology

A reply to our letter seeking additional data from the Oklahoma Geological Survey, source of information for considerable of the article, read in part as follows:

SIR: "Mr. Locke's question undoubtedly centers about the following statement: '... (pyrite) would not separate on the tables because of almost identical specific gravities.' The first part of the statement, 'pyrite would not separate on the tables,' is

true in part and would not have been questioned if the last part, 'because of almost identical specific gravities,' had been omitted. It is reasonable to interpret this statement to mean that pyrite and quartz sand have almost identical specific gravities, and of course this is not true, for the gravity of pyrite is about 5.0 and that of quartz is 2.65. I don't know whether you intended to mean that these minerals have the same gravity, as the statement itself indicates, or, as Professor Locke surmises, the very fine particles of pyrite have nearly the same weight as larger sand grains.

"My own ideas about the Roff operation are based on a brief inspection of the plant in 1942 and a study of samples collected in October, 1944. I am satisfied the tables were installed to remove iron minerals, pyrite and limonite, but of the two, pyrite was more objectionable. Enough of these minerals were rejected from the sand in No. 1 pit, but when they opened the No. 2 pit, in the green colored sand, more pyrite was encountered than they anticipated. Some of the pyrite was rejected from this sand on the tables, but a certain amount of very finely divided pyrite evidently passed the tables with the sand, and this was sufficient to raise the iron content above that desired for high grade glass sand. Therefore it was necessary to remove virtually the last traces of pyrite and flotation cells were installed for this purpose.

"There may be something more than my interpretations indicate but at present I am inclined to agree with Professor Locke in the idea that tabling was not satisfactory because of the small size of some of the pyrite grains. Maybe it would be best to publish a correction, saying that some but not enough of the pyrite was rejected by tabling and that in conjunction with flotation practically all of the pyrite is removed."

WILLIAM E. HAM,
Associate Geologist,
Oklahoma Geological Survey,
Norman, Okla.



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TUNE IN THE TEXACO STAR THEATRE WITH JAMES MELTON EVERY SUNDAY NIGHT—CBS

Marquette to Build Milwaukee Distributing Plant

MARQUETTE CEMENT MANUFACTURING Co., Chicago, Ill., has announced through President W. A. Wecker that the company plans to build a modern cement storage and packing plant in Milwaukee, Wis. Work will start in the near future.

Cement manufactured in the company's Oglesby, Ill., plant will be transported in barges to Chicago where the bulk cement will be transferred to specially designed ships and brought to the new storage plant in Milwaukee. Consisting of eight or more concrete storage silos with an annual capacity of 100,000 bbl., the plant will have facilities to load cement simultaneously into railroad cars and trucks, both packaged and in bulk. Land and docking facilities will be leased from the City of Milwaukee which will have to make certain improvements before the plant can be built.

Ready Mix Plant

WATERTOWN CEMENT PRODUCTS Co., Watertown, S. Dak., recently completed the erection of a ready mixed concrete batching plant. Two Jaeger 2-cu. yd. mixer units mounted on 1½-ton Diamond T trucks are used for deliveries. The batching plant has a capacity of 150 cu. yd. per day. The company also manufactures and installs concrete stove silos and produces concrete block. E. C. Atkinson is president and treasurer of the company and Merrill Allen is secretary and manager.

State in Agstone Business

TWO PLANTS have been set up by the State of West Virginia for the manufacture of agricultural limestone. One plant is located at Baker, Hardy county, and the Rich Mountain plant in Randolph county was recently placed in production. State Agriculture Commissioner J. B. McLaughlin is reported to have said that "the State is not entering into the agricultural lime business on a competitive basis with commercial enterprises."

Army-Navy E to Coplay

COPLAY CEMENT MANUFACTURING Co., Coplay, Penn., was recently awarded the White Star renewal to its Army-Navy "E" flag for meritorious services on the production front. President M. E. Grunewald of Coplay sent a letter on July 25 to Under Secretary of War, Robert P. Patterson, expressing the appreciation of the employees of the Machine Shop Division for the honor bestowed upon the

company. With the end of the Japanese war, there will be a termination of strictly war material activities but some outstanding records have been made by Coplay and many other cement companies in supplying the demands of the war effort which may be released.

Secure Road Jobs

THE SOUTHERN OHIO QUARRIES Co., Columbus, Ohio, put in the low bid of \$28,826 for widening and resurfacing 1.41 miles of routes 41 and 74 in the village of Peebles. A premixed surface course is to be applied. Brewer & Brewer Sons Co., Chillicothe, Ohio, had a low bid of \$31,281 for resurfacing 1.62 miles with asphaltic concrete on route 75, in Vinton county.

Deny Wage Increase

A GENERAL WAGE INCREASE of 10c an hour was denied employees of the Ideal Cement Co., Portland, Colo., plant by the Ninth Regional War Labor Board. The question of job reclassification, requested by District 50, Local 421, bargaining agent for the employees, was referred back to the company and union for collective bargaining. Extra pay for night work was awarded the workers at 4c an hour for second shifts, 5c an hour for intermediate shifts and 6c an hour for third shifts.

Cement Distributing Plant

MISSOURI PORTLAND CEMENT Co., St. Louis, Mo., will start construction of a large cement distributing plant on Wolf river near Memphis, Tenn. (Original plans, referred to in Rock Products, August, 1944, called for construction of a cement plant.) Cement, made in St. Louis, will be transported by barge in bulk on the Mississippi river.

Reorganize

BERKSHIRE GRAVEL Co., Lenox Dale, Mass., has taken over the assets of the company of the same name and the Lindholm Construction Co., of Pittsfield, Mass. Albert I. Newton of Lenox, Mass., is president of the new concern and Carl B. Lindholm of Pittsfield, Mass., is chairman of the board. Charles A. Bassett is general manager, and Roscoe L. Spoffard, clerk and treasurer. James W. Washburn will retire.

Big Agstone Plant

CALLANAN ROAD IMPROVEMENT Co. has recently completed a \$100,000 plant at South Bethlehem, N. Y., for the production of agricultural limestone. The plant will supply farmers in Albany County, N. Y., with 70,000 tons of agstone annually. Machinery for the agstone operations has been installed next to the company's crushing plant where road-building stone has been produced for 60 years.

Replace Dewatering Unit

MCGRATH SAND AND GRAVEL Co. plant at Forreston, Ill., has recently replaced a dewatering plant with another, located closer to the deposit. The old plant was about 1200-ft. distant from the pit, and pumping operations were therefore not as efficient as desired. The new plant is about 400 ft. from the dredge, and a new belt conveyor has been installed to move material from the dewatering plant to the main screening plant.

In addition, a surge silo has been built which receives material from the dewatering elevator and feeds the conveyor when the dredge is not in operation. The silo, which is constructed of concrete staves, is 20-ft. high and 20-ft. in diameter.



Dewatering plant with concrete stove storage silo and dewatering screw

Big Gypsum Market

THE GYPSUM ASSOCIATION anticipates a market 25 percent greater than the prewar period for the gypsum industry. Several factors were pointed out by the association for this optimistic estimate:

1. Most construction and economic experts predict annual postwar construction of all types will be from \$15,000,000,000 to \$21,500,000,000, even the smaller figure of which is in excess of the record \$14,000,000,000 yearly construction from 1926 to 1928 and is exceeded only by the \$17,000,000,000-plus construction (mainly for war plants) in 1943.

2. Gypsum products, which were rapidly growing in use when the war started, have increased in diversity and become more familiar to construction experts and home builders because of their usual availability, fire-safety and economy.

3. Lumber promises to be in short supply for a time even though the war with Japan is over, thus increasing the demands for other building materials, including gypsum.

Plan Crushing Plant

A NEW COMPANY has been organized by Paul and Glenn Anderson and Harold and Herbert Oxandale of Holton, Kans., to engage in the production of agricultural limestone and road stone. The crushing plant will have a capacity of from 40 to 50 tons of crushed stone per hour.

Lime

LITTLE CHANGE was experienced in the lime industry in 1944 over that of 1943, according to the Bureau of Mines. There was a supply shortage of chemical lime due to impediments in production caused by curtailment of industrial gas supplies, poor quality of fuel, and inadequate labor. A 29 percent gain in all liming materials sold, chiefly agricultural limestone, was registered over that of 1943. The

table below shows the lime sold by producers in the United States, by types and major uses, in 1944:

Postwar activities in the building program will see greatly increased consumption of mortar and plaster. Revived and new, peacetime industrial activities will require large quotas of chemical lime as well. Total supply of lime on hand for the year was 6,427,034 short tons.

Leases Quarry

STEWART & NATTINGER CONCRETE PRODUCTS Co., Clinton, Mo., has leased the quarry owned by Milo Park, 2½ miles south of Deepwater, Mo. The company has installed a primary crusher and hammermill. In addition to crushed limestone aggregate for its concrete products business, the company will produce crushed stone for roads and construction and also for agricultural limestone.

Purchase Gravel Plant

SCHNEIDER SAND & GRAVEL Co., Clinton, Iowa, has been purchased by Fred R. McKenzie of Fred R. McKenzie & Co. He will continue operating the sand and gravel plant, steamboat "Iowa" and barges under the name of Schneider Sand & Gravel Co.

Buy Gravel Concern

A. S. HOLETON and SON Co., operating a sand and gravel plant near Dawson, Ohio, was recently sold to Anthony, Clarence and Paul Dawson of Ft. Laramie, Ohio. Mr. Holeton has been operating his plant for about 20 years, and in recent years has had his son, Warren Holton, associated with him.

Panama Cement Plant

THE PANAMA CEMENT COMPANY (Cemento Panama, S. A.) has plans for the construction of a modern port-

land cement manufacturing plant in Panama City, Panama, estimated to cost more than \$1,000,000, according to a Washington, D. C., report.

Cement to Lime

THE PEERLESS CEMENT CORPORATION, Detroit, Mich., is studying the possibility of converting its Port Huron, Mich., cement plant to the manufacture of lime after the war. Lime has been made at this plant for some time to supply a war demand. Considerable new equipment will be purchased including dust control apparatus, according to a local report.

Buys Quarry

KEN ROYCE Co., with offices at 185 Bayshore boulevard, San Francisco, Calif., has opened a quarry in Rockaway Beach, across the highway from the old quarry. The quarry is being operated in addition to its construction equipment rental business. It has a capacity of 250 tons per hour, producing crusher run base material, birdseye, concrete rock, drain rock, agricultural limestone and poultry grits.

Start Gypsum Plant

NATIONAL GYPSUM Co., Buffalo, Mich., has started its \$8,000,000 postwar expansion program, construction having been placed under way at seven different points. Construction includes a new \$2,000,000 gypsum board plant at Baltimore, Md., a \$2,000,000 lime plant at Kerns, Va., a gypsum mill at Savannah, Ga., a fiber insulation board plant at Mobile, Ala., and a gypsum plant at Rotan, Texas.

Milwaukee Road Program

A THREE-YEAR PLAN for improvement of Milwaukee County, Wisconsin trunk highways has been presented to the County Board Highway Committee, Milwaukee, Wis. The project calls for the improvement of 107 miles of county highways. The Federal government has allotted \$915,000 to the county which is to be matched by a similar amount of county and local funds.

Seek Lime

ACCORDING to a local report, Ralph J. Duvall, manager of production and distribution, Kansas City, Kans., has been seeking additional sources of lime to be used in water purification. The water plant normally uses 10 or 12 carloads of lime each year, but due to heavy rains and the high river stage, demands have doubled.

Start Agstone Plant

JOHN J. STARK has started agricultural limestone production at a crushing plant and quarry in Crawford County, 10 miles west and two miles north of Pittsburg, Kans. Production is averaging 40 tons an hour.

| | Short Tons | Value |
|--|------------|--------------|
| By types: | | |
| Quicklime | 5,150,545 | \$38,055,518 |
| Hydrated lime | 1,323,018 | 10,642,644 |
| Total lime (includes captive tonnage)..... | 6,473,563 | \$48,698,162 |
| By uses: | | |
| Agricultural: | | |
| Quicklime | 168,364 | \$ 1,085,217 |
| Hydrated lime | 298,026 | 2,391,658 |
| | 466,390 | \$ 3,476,875 |
| Building: | | |
| Quicklime | 126,944 | \$ 1,225,216 |
| Hydrated lime | 393,056 | 3,261,816 |
| | 520,000 | \$ 4,487,032 |
| Chemical and Industrial: | | |
| Quicklime | 3,564,447 | \$24,303,473 |
| Hydrated lime | 631,936 | 4,989,170 |
| | 4,196,383 | \$29,292,643 |
| Refractory (dead burned dolomite)..... | 1,290,790 | \$11,441,612 |

(Continued from page 49)

as follows: 1—A lid will be kept on food prices; 2—Clothing prices will be kept in line, and more lower-priced clothing will be made available; 3—A flexible pricing policy will be followed with respect to mass production of automobiles, refrigerators, vacuum cleaners, washing machines, etc., but an effort will be made to stimulate manufacture at close to 1942 retail prices; 4—Rent controls will be continued; Every attempt will be made to weed out unnecessary restrictions, but price and rationing controls will be vigorously enforced.

Administrative Director J. R. Boyd of the National Crushed Stone Association has pointed out that while MPR-592 supersedes MPR-188, agricultural limestone is not covered as it remains under order MPR-386. Mr. Boyd points out that in the new regulation, the expression "purchaser of the same class" is defined to mean that "price makes class." Heretofore, it has been generally accepted that "purchaser of the same class" meant such divisions as retailers, contractors, governmental agencies, railroads, etc., but now O.P.A. states that, in addition, price itself makes a class.

Executive Secretary V. P. Ahearn of the National Sand and Gravel Association advises that the "price makes class" provision has created confusion and uncertainty. Both associations have expressed the belief that price control no longer is required for sand and gravel or crushed stone as normal competitive forces in the industries would prevent runaway prices.

The National Lime Association has appealed to O.P.A. to redefine "class of purchaser" on a functional basis.

Concrete Products Machinery

The War Production Board, in a statement issued August 2, reported that machinery for production of concrete block, brick, and pipe is generally in short supply as this equipment was first prohibited by M-126 and later by high war priority orders placed with the two principal manufacturers. (However, this situation may have eased considerably with the termination of the Japanese war.) The statement as of that date reads: "The present total output of high production machines is eight per month. The known need as surveyed by the Building Materials Division is 200 machines. War contracts were finished on August 1, and if material is available, together with such components as motors, chain and compressors, the total production of block machines will probably be at the rate of 20 per month by September 1. It is possible that this rate may be raised to 30 per month six months hence."

New Block Concern

CHESTER CONCRETE PRODUCTS CO., Chester, S. C., has been incorporated

by J. R. Suber, K. S. Tupper and others with a capital of \$25,000 to establish a concrete block manufacturing plant about two miles from the city.

U.S. Gypsum Buys Pacific Properties

UNITED STATES GYPSUM CO., Chicago, Ill., has purchased the gypsum plant of Pacific Portland Cement Co., at Plaster City, Calif. Reports state that \$2,000,000 will be spent for improvements to plant and quarry in a plan to expand operations. Included in the change of ownership are the plant and site, consisting of 500 acres, all rail lines and approximately 8000 acres of quarry properties in Imperial County. At present the Plaster City plant is producing wall plasters, casting plasters, wallboard, agricultural gypsum and crushed gypsum rock. Operations will continue under the direction of Allen Moore, works manager.

Cement Production

BUREAU OF MINES reports that production of finished cement during June, 1945, totaled 8,934,000 bbl. or 13 percent above the output in June of 1944. Mill shipments of 10,088,000 bbl. were 8 percent above the corresponding month of 1944. The movement from mills in June, 1945, exceeded production, and stocks of 18,445,000 bbl. on June 30 were 12 percent below the corresponding month of 1944 and 6 percent below the total on May 31, 1945. Production of finished portland cement, cement clinker, and shipments of portland cement for the first six months of 1945 show an increase over the corresponding figures of the previous year. The increase is attributed largely to relaxation of Government restrictions on construction and an increase in private construction, particularly industrial building.

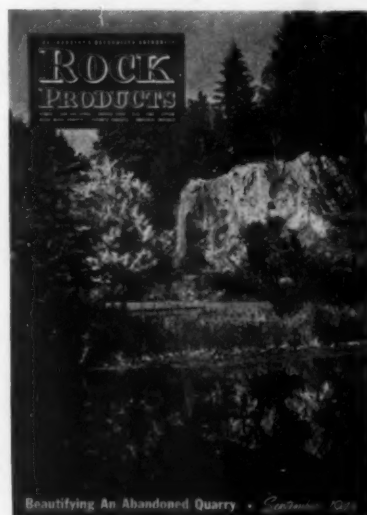
The following statement gives the relation of production to capacity, and is compared with the estimated capacity at the close of June, 1945, and of June, 1944:

| | RATIO (PERCENT) OF PRODUCTION TO CAPACITY | | | | |
|--------------|---|-----------|-----------|-----------|-----------|
| | June 1944 | June 1945 | June 1945 | Apr. 1945 | Mar. 1945 |
| The month... | 40.0 | 45.0 | 40.0 | 36.0 | 31.0 |
| 12 months... | 43.0 | 39.0 | 39.0 | 38.0 | 37.0 |

Pavement Yardage

AWARDS of concrete pavement for July, 1945, have been announced by the Portland Cement Association as follows:

| | SQUARE YARDS AWARDED | |
|-----------------------|----------------------|------------------------|
| | During July 1945 | During 1st 7 Mos. 1945 |
| Roads | 553,539 | 2,744,913 |
| Streets and Alleys... | 742,525 | 2,319,356 |
| Airports | 2,900,755 | 7,018,610 |
| Total | 4,196,819 | 12,082,879 |



Reproduction of September front cover

On the Front Cover

ILLUSTRATED in four colors on the front cover of this issue is a scene taken from the world-famous Butchart Gardens at Vancouver Island, British Columbia. The 25-acres of gardens at Benvenuto beautify the site of one of the first quarries serving the cement industry, and honor Canada's pioneer cement manufacturer, R. P. Butchart. Mr. Butchart was identified with some of the first cement companies built in Canada; the Owen Sound Portland Cement Co., Owen Sound, Ont.; Lakefield Portland Cement Co., Lakefield, Ont.; and a plant at Montreal, Canada, now part of the Canada Cement Co. In 1904, he came to British Columbia, and built a number of cement plants which he later sold to the Canada Cement Co. Mr. Butchart also was identified with the management of the Oregon Portland Cement Co.

Resume Annual Meetings

BY ACTION of the boards of directors, the National Sand and Gravel Association and National Ready Mixed Concrete Association will hold annual meetings during the week of January 21, 1946, and the National Crushed Stone Association will hold its annual meeting during the week of January 23, 1946. All meetings will be held at the Netherland Plaza Hotel, Cincinnati, Ohio. There will be no machinery exhibits.

Boards of directors of the National Sand and Gravel Association and National Ready Mixed Concrete Association will hold meetings at the Palmer House, Chicago, Ill., on October 18 and 19, respectively, in the Crystal Room. National Industrial Sand Association will hold a Fall meeting at The Homestead, Hot Springs, Va., November 8 and 9.

HINTS *and* HELPS

Practical Ideas Developed by Operating Men

Prevent Belt Slippage

IN THE ILLUSTRATION is shown the head pulley of a 24-in. conveyor belt, 80-ft. centers, with a difference in elevation between head and tail of



Slotted lagging on head pulley prevents conveyor belt slippage

20 ft. When sand and gravel are carried to capacity, the belt slips on the smooth iron face of the head pulley even when using a snub. To correct this condition, the pulley was faced with $\frac{1}{2}$ -in. thick rubber lagging having staggered transverse slots made by a sharp chisel or similar tool. These slots act as suction elements between belt and pulley, effectively preventing slippage. This idea, worked out by W. F. Herget, is being used at the Rock Island Sand Gravel Co., Rock Island, Ill.

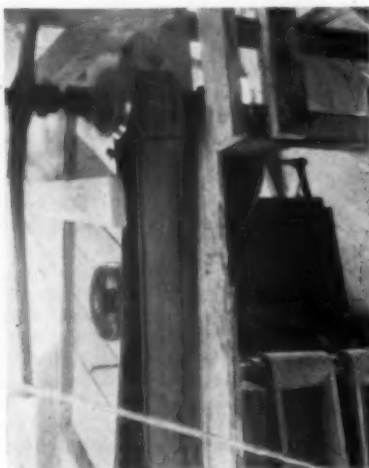
Controlling Stone Feed

NOVEL IN APPLICATION is the method devised by the Casey Lime and Stone Co., Casey, Ill., for controlling feed of raw stone to the primary crusher.



Oilwell casing at end of chute feeds stone to primary crusher

Stone dumped from trucks to a chute feeding the crusher sometimes would enter too rapidly, thus causing clogging or choking. To eliminate this and regulate the feed, movable breaker plates were hung at the discharge end, as shown in the illustration, which partially stopped the material. A 12-in. oil well casing, 4-ft. long, was then filled with concrete with a shaft through the center, and



Clutch on line shaft, upper left, regulates movement of feeder

installed at the discharge end of the chute, directly under the hanging plates. A pulley at the end of the shaft, driven by a flat belt from a line shaft, powered the drum so that it would revolve and thus feed the stone into the crusher. A clutch on the line shaft governed the speed.

Fine Crushing

By J. F. PRUYN

BY BORING A HOLE in the crusher casting, attaching the fixed jaw plate and inserting shims, a western plant

converted an old jaw crusher into a very serviceable fine reduction crusher. This converted crusher has been used in reducing a rock sample for laboratory analysis, but the manner in which it has stood up indicates that it could be used in a small milling operation.

Shims are made of any type of plate. The bolt is about $\frac{3}{4}$ -in. diameter, and the face plate is made of steel plate from about $\frac{3}{4}$ -in. to 1 in.

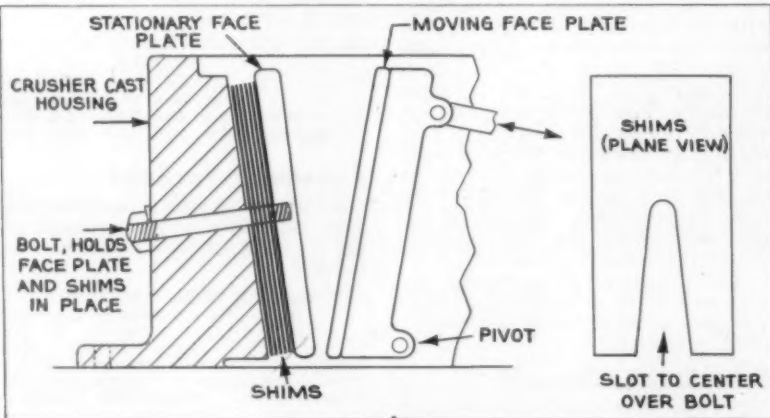
Speed Reducer

ANDERSON SAND AND GRAVEL CO., INC., Rockford, Ill., employs a speed reducer for a sand screw which is unusual. As shown in the illustration, a 5-in. pulley attached to a motor



Five-inch pulley on motor connected to 42-in. pulley by V-belt to reduce speed of sand dewatering screw

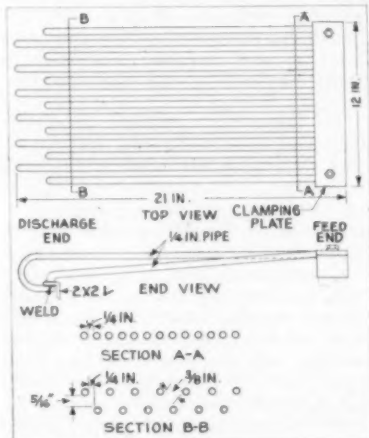
operating at 1140 r.p.m. is connected by V-belt drive to a 42-in. pulley, driving gears which control the screw speed. Further reduction is made by the gears, but the unusual feature is the large difference in diameters of pulleys in such a short distance between the shafts of the pulleys.



Shims convert jaw crusher for fine crushing

Screening Out Flat Rock

A VIBRATING SCREEN SURFACE capable of removing excess flat rock from sized stone to permit the use of the screen throughs as concrete aggregate is described in Bureau of Mines Bulletin 3781. The selector consists of $\frac{1}{4}$ -inch pipes parallel to the direction of travel of the rock, and properly spaced for the particular size treated. The pipes at the feed end are in the same horizontal plane, but at the discharge end, alternate pipes are staggered vertically with respect



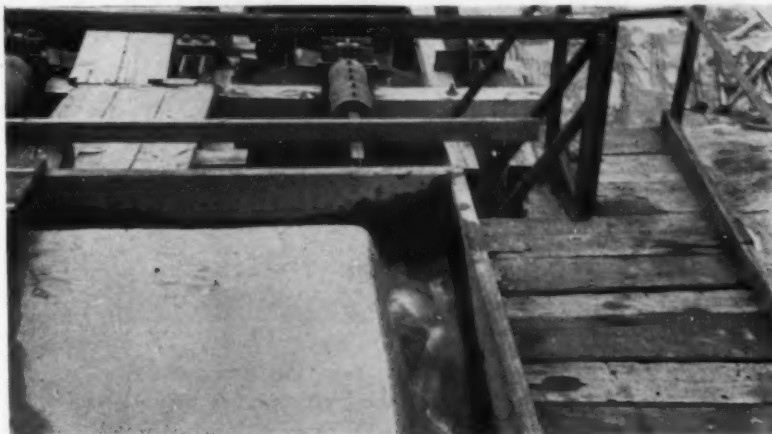
Design of V-opening screen with $\frac{1}{4}$ to $\frac{3}{8}$ in. openings

to the adjacent pipes on either side—to produce V-openings. The sketch illustrates the elements of design.

The screening unit itself is mounted on a standard vibrating body, an Allis-Chalmers 12- x 21-inch low-head being used in these experiments. The rock tested was the original jaw crusher product sized over square mesh opening vibrating screens followed by passage over V-opening screens in a continuous operation to simulate common plant practice. Three square mesh sizes were made; viz., 2- x 1-in., 1- x $\frac{1}{2}$ -in., $\frac{1}{2}$ - x $\frac{1}{4}$ -in. and following them, V-opening screens of $\frac{1}{2}$ - to $\frac{3}{4}$ -in., $\frac{1}{4}$ - to $\frac{3}{8}$ -in. and $\frac{1}{8}$ - to $\frac{1}{16}$ -in. openings, respectively. A summary of results follows:

CRUSHER PRODUCT COMPOSED OF 16.0% FLAT AND 84.0% CUBICAL ROCK

| Product | % Each Fraction | % Flat | % Cubical | % Recovery | % Total |
|---------------------------|-----------------|--------|-----------|------------|---------|
| Original Fraction—2x1 in. | 14.2 | 85.8 | ... | ... | 63.3 |
| V-Screen Cubical—2x1 in. | 7.8 | 92.8 | 87.6 | ... | ... |
| Original Fraction—2x1 in. | 23.2 | 76.8 | ... | ... | 22.5 |
| V-Screen—2x1 in. | 11.5 | 88.5 | 78.3 | ... | ... |
| Original Fraction—2x1 in. | 36.4 | 63.6 | ... | ... | 5.5 |
| V-Screen—2x1 in. | 9.0 | 91.0 | 52.7 | ... | ... |
| Minus $\frac{1}{4}$ in. | ... | ... | ... | ... | 10.7 |
| Total | ... | ... | ... | ... | 100.0 |



Settling tank to recover fines from cone classifier overflow

Three other crusher samples tested contained 33.6 percent flat—66.4 percent cubical; 35.8 percent flat—64.2 percent cubical; and 11.8 percent flat—88.2 percent cubical, respectively. In the first two, the 2- x 1-in. size only, was cleaned up sufficiently to meet aggregate specifications, whereas all fractions of the last sample cleaned up satisfactorily.

Recovering Fines

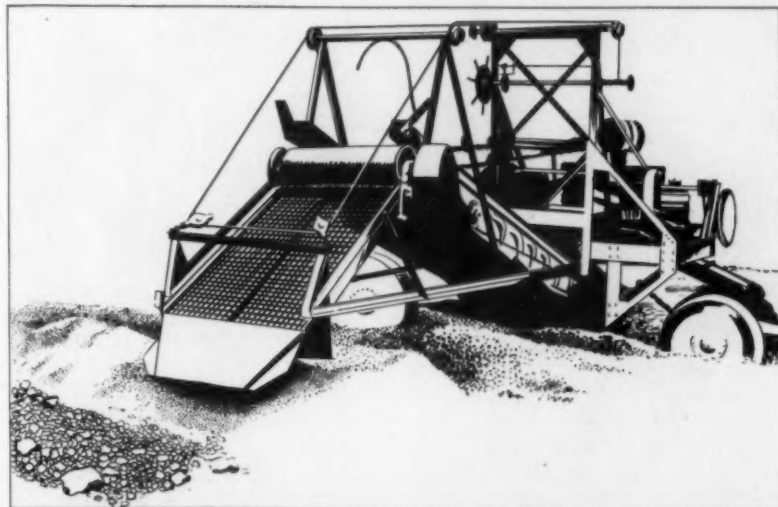
MCGRATH SAND AND GRAVEL CO. plant at Pekin, Ill., has introduced a settling tank or "dead box" to recover fines from the water which originally was sent to waste. Sand and gravel separation is made in two batteries of rotary screens and the sand and water sent through two flumes to two batteries of two cone classifiers. The water which then would go to waste is instead sent into a 14- x 12-ft. settling tank with overflow on three sides, giving a 38-ft. perimeter. This slows the velocity

of the water to such an extent that much of the fine sand is recovered. The tank has a sloping bottom, recovery being made through a manually-operated discharge gate at the end of the tank. With this system, about 12-percent passing 100-mesh is recovered.

Cobble Screen

A COBBLE SELECTOR was used by Caddoa Constructors, contractors for the construction of Caddoa dam near Caddoa, Colo., to screen fill material. The idea may be put to some practicable use by the sand and gravel industry to eliminate certain sizes before processing at the plant.

As described in *Western Construction News*, the cobble machine was a standard elevating grader equipped with an inclined vibrating screen, at the discharge end of the elevator belt. The screen was supported by four loose-jointed supports and was shaken by a cam arrangement from the conveyor belt mechanism.



Equip elevating grader with inclined vibrating screen to separate cobbles from finer material

NEW MACHINERY

Arc-Welding Electrode

GENERAL ELECTRIC Co., Schenectady, N. Y., has developed a heavily covered arc-welding electrode for welding low-alloy, high-tensile steels. It is said to be specially designed for



Welding high-tensile steel with new electrode

use on car-molybdenum steel in the high-pressure piping industry, but the electrode may also be applied to fittings and structural weldments of many kinds.

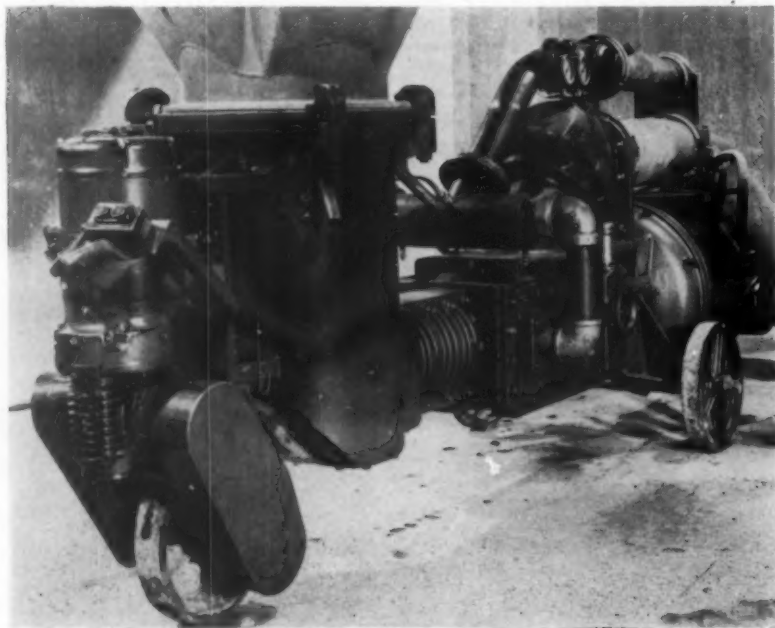
Known as Type W-56, the new electrode operates on either alternat-

ing current, or direct current, reverse polarity, and its range of current is sufficiently broad to cover a wide range of plate thicknesses. A medium-long arc is recommended for best results with this electrode. It can be used in the flat, vertical, and overhead positions. The electrode is available in sizes $\frac{1}{8}$ -, $\frac{3}{16}$ - and $\frac{1}{4}$ -in. in diameter.

Trackless Portable Pump

FULLER Co., Catasauqua, Penn., has announced a trackless portable pump which has been installed in a number of cement plants for conveying finished portland cement from bins and silos to packers. This machine is not limited to the handling of cement but can be applied to conveying many other types of dry pulverized materials.

The pump operates on the same principle as other types of Fuller-Kinyon pumps. It can be moved, together with its motor, under its own power, to any aisle or position from one point of discharge to another. Connection to silos can be made quickly and easily without dust or loss of material. A cable of sufficient length is furnished with each machine for connecting to power outlets spaced at proper intervals. Forward and reverse propulsion is by means of a gear-motor, controlled from push buttons mounted near the steering handle at the front end of the machine.



Portable pump for conveying cement and other dry pulverized minerals

Hard-Facing Alloys

STOODY COMPANY, Whittier, Calif., offers two new hard-facing alloys for electric application; namely, coated Stooddy 1 and coated Stooddy 6. A special dipped coating makes application easy with either a.c. or d.c. electric equipment, and at the same time it is said that it protects the alloying elements so that weld deposits are produced having the same analysis and physical properties as those applied by the oxy-acetylene torch.

To retain the greatest degree of hardness, heat resistance and corrosion resistance, iron pickup should be minimized during application. This is accomplished by using straight polarity on d.c. electric applications. Similar characteristics result with a.c. application. Rapid burn-off rate with low penetration and high build-up are normal operating characteristics of both coated electrodes, according to the manufacturer. Porosity and shrinkage cracks are said to be almost completely absent in coated Stooddy 6 deposits, and their presence is further minimized by slow, even cooling. Because elongation of coated Stooddy 1 is nil, some shrinkage cracks may occur in deposits applied electrically. However, in most cases such cracks do not affect the efficiency of the hard-facing deposit.

Recommended uses for the above hard-facing electrodes are for all heavy equipment subjected to heat, abrasion, corrosion and impact, and for hard-facing intricate parts where use of oxy-acetylene is impracticable. Coated Stooddy 1 is generally applied where sliding abrasion is of major importance because of its high hardness and wear resistance. Coated Stooddy 6, having greater ductility, is preferable for those applications involving impact.

Postwar Trucks

MARMON-HERRINGTON Co., Inc., Indianapolis, Ind., has announced that production is scheduled to start soon on heavy-duty postwar truck models. Two models, MH555-4 and MH440-4, will be built. The larger of these, Model MH555-4, will be powered by a 131 hp. engine, on a wheelbase of 161 in., with a permissible gross loaded weight of 27,000 lbs., on 11.00x20 tires. Slightly smaller Model MH440-4, will be powered by a 118 hp. engine, on a wheelbase of 158 in., with a permissible gross loaded weight of 22,500 lbs. on 10.00x20 tires. Both models will have 10 forward speeds and four reverse. Both models will be all-wheel drive.

Tractor-Mounted Crane

THE HYSTER Co., Portland, Ore., and Peoria, Ill., has devised a combination dragline, clamshell and crane unit for tractor mounting which has been called The Hystaway.

According to the manufacturers, the new unit permits a working combination of bulldozer, dragline, clamshell and crane. High partial use of the bulldozer can be made without removing the Hystaway unit from the rear of the tractor, and when full bulldozer production is desired, the unit can be removed in less than one hour and it can be reinstalled in two hours.

It is said that full tractor mobility is retained as crawler track oscillation is not impeded by the unit; tractor rigidity when desired can be accomplished by a crank control at the mast head.



Combination bulldozer, dragline, clamshell and crane unit mounted on tractor

Absorbent Sweatband

AMERICAN OPTICAL Co., Southbridge, Mass., has announced an absorbent sweatband for welders and all workers on hot jobs. The sweatband is made from synthetic sponge, 7/8-in. long, which covers the greater width of the brow. By keeping sweat out of the eyes and off goggles, the sweatband helps reduce the possibility of accidents resulting from blurred vision. In addition, it is comfortable and can be easily sterilized for continual use.

Slurry Pump

ALLIS-CHALMERS MANUFACTURING Co., Milwaukee, Wis., has designed its "CW" slurry pump for solid, abrasive, and corrosive materials handling, and sludge disposal in metal and non-metallic mining industries. In the illustration is one of these



Pump which handles a solution containing 40 percent solids

pumps which moves a solution containing up to 40 percent zinc tailings solids through a 400-ft. long discharge pipe. The pump moves 800 to 1000 tons of tailings every 24 hours at a zinc reclamation project of the United Mining and Milling Co., at Livingston, Wis.

Liquid Tire Inflation

THE GOODYEAR TIRE AND RUBBER Co., Akron, Ohio, has approved the use of Solution 100 in tires of vehicles which carry only the weight of the vehicle and travel at relatively slow speeds. In such service, the use of this solution assures increased traction and constant inflation pressure. Use of liquid inflation is not recommended for load-carrying tires of trucks, cranes, trailers and earth-moving vehicles. Increases in internal pressure occur in tires filled with liquid solution in cases where payloads are carried. Speed in excess of 10 miles per hour may cause excessive strains due to increased centrifugal force. The tires must be filled 100 percent with this solution.

Cement Batcher

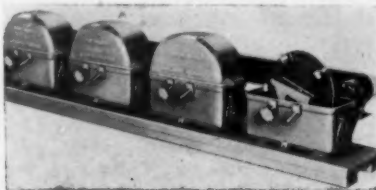
THE C. S. JOHNSON Co., Champaign, Ill., has brought out a portable twin-silo cement batching plant with a storage capacity up to 1600 bbl. Plants of similar design in capacities of 761, 1044, and 1327 bbl. also are offered.

Constructed of all-welded units, the plant can be set up quickly without a crane, if desired. The leg section on the overhead silo is so designed that it can pivot on a base plate mounted in the concrete footing. The pivot can then be utilized to tip the entire leg and silo assembly into place by means of a gin pole and tractor winch.

Other equipment used with this plant includes a cement batcher bucket elevator and screw conveyor with capacities of 300 bbl. per hour. A bin-gage indicates high or low level of cement in silo.

Flotation Feeder

DENVER EQUIPMENT Co., Denver, Colo., has developed a multi-compartment feeder for the centralized distribution of flotation reagents. In the announcement, the manufacturer states that it is a compact unit with simple but very accurate means of adjustment which provides accuracy of feed control in the flotation process. Each compartment is identical in



Multi-compartment feeder for flotation reagents

construction and operation to the single compartment unit developed by the company, many of which have been used on simplex and duplex feeders. The several compartments are driven by a single motor through a sprocket and chain drive.

Each of the compartments may be regulated independently. Feeder cups are bolted to a plate steel disc. The size and number of cups used may be changed to vary the maximum feeder capacity. A convenient handwheel provides quick, accurate adjustment of the feed rate. The multi-compartment feeder provides a desirable flexibility in the distribution system. The same liquid may be fed from each compartment to different points in the circuit, or different liquids may be distributed to the same or different points in the circuit.

These new feeders are available in three sizes, each of which is made in simplex, duplex, and multi-compartment units. Special feeders for handling corrosive liquids and those which require heating to maintain uniform viscosity are made to meet the conditions of each individual problem.

FELDSPAR

Processing for GLASS

Carolina Mineral Co., Inc., Bedford, Va., has a capacity of 90 tons a day of crushed and dried feldspar for glass manufacture

By H. E. SWANSON

PROCESSED GRANULAR FELDSPAR for glass manufacture is now being produced at the Carolina Mineral Co., Inc., plant, Bedford, Va. This plant was purchased in 1941 from the Virginia Feldspar Company and immediately put into 24-hour-a-day production. With a capacity of 90 tons a day, the plant requires a minimum amount of labor, operating with two men on each eight-hour shift, with one mill foreman.

Primary Crushing

Raw spar is received from five nearby mines and is delivered by local trucking concerns. Two of the mines are company-owned and the other three sell by the ton. Material is weighed on a platform scale at the

General view of plant with office to the left, platform scales to the right

plant before dumping into the delivery hopper. The crude stone is tested periodically to insure a product with a minimum amount of iron impurity, and material too high in iron content is rejected. In addition to this testing, samples are taken hourly from the finished product as it is being delivered to railroad cars and the ac-

cumulation from each car is sent to a laboratory for analysis.

Material from the mines is weighed on a 20-ton Fairbanks-Morse platform scale in advance of the delivery hopper. After weighing, the trucks dump into the hopper in which sections of steel rails, placed at a 45-degree angle, take the impact and



Left: Two methods of loading railroad cars; pipe at left from storage bin, and below, screw conveyor from bin



Below: Feeder which feeds material from bin to belt conveyor



CRUSHING



L. D. Gregory, Superintendent

direct the flow toward a discharge gate. The spar slides to one corner of the hopper where the manually-controlled gate regulates feed to a 15- x 30-in. Reliance jaw crusher, which crushes to a top size of $\frac{3}{4}$ -in. Primary crushing to a size this small gives better results in the secondary crushing, according to the superintendent. Material from the primary crusher drops to the boot of an enclosed bucket elevator, 75-ft. centers, which takes it to a steel storage bin of 150-ton capacity. A 12- x 30-in. Jeffrey vibrating magnetic feeder regulates the flow from the bin to a 14-in. belt conveyor, 20 ft. centers, equipped with a Dings magnetic pulley. The iron content of the spar, which builds up in the grinding process, is thus kept at a minimum with the assistance of the magnetic pulley, which removes much of the miscellaneous tramp iron which is picked up in transit.

Dry "Spar" Before Screening and Secondary Crushing

The conveyor moves material to a rotary dryer, 4 ft. in diameter and 20 ft. long, shown in an accompanying illustration, which is lined with Sillex blocks. The dryer, which revolves four times a minute, is fired by a Hauck oil burner, with a blower connection which sends a flame into the discharge end under 3 p.s.i. pressure. A temperature of 300 degrees F. is maintained when wet spar is being processed. When dry material is received, it goes through the same routine except that the dryer does not receive heat.

From the dryer, the spar is sent by gravity chute to the boot of a bucket elevator, 50 ft. centers, which takes it to a 15-ton capacity feed bin in the screening and secondary crushing plant. Feed from this bin is regulated by a Hardinge constant weight feeder, which sends material to a bucket elevator, 65-ft. centers, that takes it to the screening operations.

Material is chuted to a 4- x 10-

(Continued on page 65)



Trucks from mines dump directly into hopper feeding primary crusher. Note 45 deg. angle of grizzly bars to assure gravity flow to crusher at left of hopper



Crushed feldspar from primary crusher goes from steel silo bin to magnetic vibrating feeder to belt conveyor for delivery to dryer



Throughs from the primary crusher are passed to a 4- x 20-ft. rotary dryer before introduction into pulverizer

Install Plant in Quarry

M. J. Grove Lime Co., Stephens City, Va., increases capacity with new hauling, crushing, and screening equipment

By H. E. SWANSON

TO DOUBLE PRODUCTION and to alleviate the labor shortage, the M. J. Grove Lime Co., Stephens City, Va., has installed additional hauling, crushing, and screening equipment. The new equipment, installed in the quarry as a primary operation, is in advance of processing at the main plant, and separates stone for flux, lime kiln, and stone which will be given finer crushing.

Prior to this installation, stone was sorted manually before delivery to the main plant for crushing and screening. Stone is obtained by both open quarry and mine operations. Loaded quarry cars are hauled by cable hoists on narrow-gauge track up to the main plant. Previous production was 45 percent agricultural limestone, 45 percent kiln stone, and 10 percent flux stone. The new arrangement permits a greater percentage of flux stone, which is much in demand. Present production is about 50 percent agstone, 30 percent kiln stone, and 20 percent flux stone.

Blasted stone is now loaded into mine cars by a 1-cu.yd. Sullivan

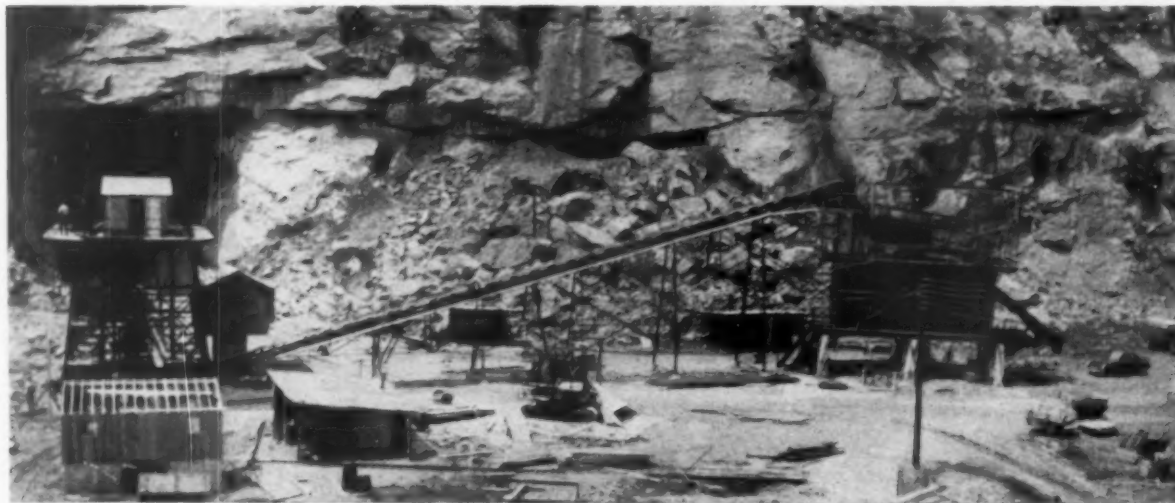
scraper-mucker, such as are used in coal mines. A 3-drum Sullivan cable-hoist, with $\frac{3}{4}$ -in. cable, pulls the scraper, which loads 4-cu.yd. Easton side-dump cars. The cars are pulled up an incline, as shown in an accompanying illustration, by cable hoist to a 50-ton capacity steel hopper. A 4-ft. Ross feeder sends stone from the hopper into a 30- x 36-in. Traylor reciprocating jaw crusher, which is set to produce the desired stone size. From the primary crusher, stone is moved by a 30-in. Link-Belt conveyor, 149 ft. centers, to a Tele-smith rotary screen, 6 ft. in diameter and 27 ft. long. Oversize, from 5- to 8-in., drops directly to quarry cars for delivery to the lime kilns. Sizes from $2\frac{1}{2}$ - to 5-in. drop into one compartment of the three-compartment bin, while under 2-in. go to the other two compartments. The $2\frac{1}{2}$ - to 5-in. size is sent to a loading platform in cars pulled by cable-hoist, for delivery as flux stone. The smaller sizes are sent to the agstone crushing plant, also by cars and cable-hoist.

The steel bin, erected on a con-



Above: Looking down long conveyor to primary crusher structure. Below: Primary crusher installation

crete substructure, has a capacity of 120 tons and has a bottom-discharge for car loading. All the plant equipment is built to insure permanence by installation on concrete substructures and steel superstructures.



Overall view of plant. Stone in mine cars is drawn up incline to primary crusher, the throughs going by belt conveyor to screening plant and bins, to the right in the illustration



Above: F. Grove White, vice-president, inspecting construction work. Below: Oscar Babbington, construction foreman, center, and J. W. Brosius, construction superintendent, to the right

Steel Replaces Wooden Trestles

In addition to this new arrangement, present wooden trestles which support the tracks leading to the main plant are being replaced by steel structures. The crushing plant is also being modernized by addition of a 4- x 10-ft. Tyler Niagara triple-deck vibrating screen to replace a rotary screen, and by the addition of a 3- x 8-ft. Tyler Niagara double-deck vibrating screen.

Construction of the new plant was handled by J. Wm. Brosius as construction superintendent and Oscar Babbington as construction foreman,



Incline from mine on which mine cars are drawn up to hopper feeding primary crusher

both of whom have been in the employ of this company for a number of years.

Robert B. Crothers is president of the M. J. Grove Lime Co., and F. Grove White is vice-president and general superintendent of the Virginia operations. This company also has four other plants in Maryland and Virginia.

Feldspar

(Continued from page 63)

ft. Tyler double-deck Hummer screen which has 3/16-in. square openings on the upper deck and 18-mesh on the lower deck. The screen is set at the proper angle to produce a 20-mesh material. Oversize from both decks goes to a 10-ton storage bin, the purpose of the upper deck being to reduce wear on the lower deck cloth. Throughs drop to a 20- x 50-in. shaker screen with 14-mesh cloth. This acts as a check screen to catch oversize in the event that a tear or rent appears in the upper screen. The product through the shaker screen drops to a 45-ton capacity bin as a finished material from which it is loaded to railroad cars by a 12-in. screw conveyor, 12 ft. centers.

Oversize in the storage bin drops by gravity chute to a hopper feeding a 3-ft. Symons short-head, fine-bowl

cone crusher, the throughs returning to the screens by bucket elevator, closing the circuit.

Adjacent to the screening plant is a 150-ton capacity steel storage silo for finished material which takes the product when the 45-ton bin is full. A chute under the check screen sends the spar to the boot of a bucket elevator, 75 ft. centers, which carries it to the silo. This silo has a side discharge through a 6-in. pipe for loading railroad cars and a bottom discharge through another pipe back to the smaller bin in the plant. Manually-operated gate valves in both pipes govern the flow to either cars or plant.

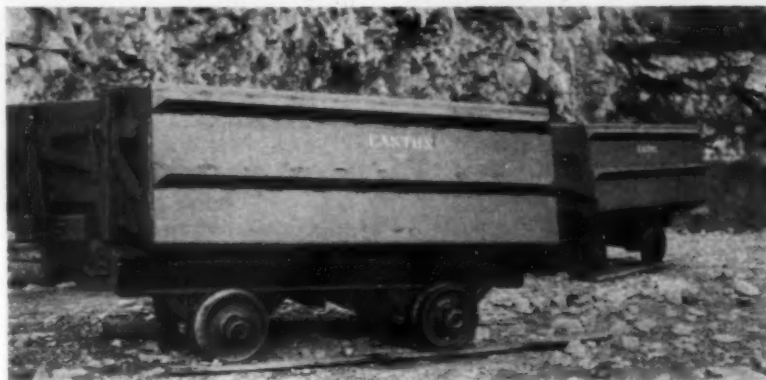
Covered storage facilities for crude spar with an 800-ton capacity are located next to the plant. In addition to providing storage for the raw material, this area is used to surface-dry the spar.

A description of this plant before purchase by the Carolina Mineral Co., Inc., appeared in the September, 1941 issue of *Rock Products*, page 52.

L. D. Gregory is superintendent of this plant, which is a subsidiary of the Consolidated Feldspar Corporation, Trenton, N. J., operators of twelve plants in various parts of the country. Mr. Gregory has been associated with the parent company for the past 37 years.

Hydrated Dolomitic Limes

STUDIES made at Bureau of Standards on dolomitic limes in which the major portion of magnesium oxide is hydrated, revealed favorable results for all limes tested. Excellent water retentivity and good compressive strength were shown by samples made with proportion equal to one bag of portland cement to two bags of lime. Of 6 cements tested, five exceeded 1000 p.s.i. and the 6th was 990 p.s.i. with water retentivity above requirements for Type II masonry cement. The 1:2:9 masonry cement mortars exceeded 600 p.s.i. which exceeds the American Standard Building code requirements for Type B mortars.



Some of the new 4-cu. yd. mine dump cars which carry stone from mine to primary crusher

Sand Separation

Operation of Vibrating Screens

Some of the fine points to be considered—summary

THE READER may think we have exhausted the subject of vibrating screens, if he has read the previous four or five instalments of this series. However, there are still some points our correspondents have emphasized, which should be included. Also, before we finish, something should be said about screen surfaces—kinds of screen cloth and plate, which may have an important bearing on the product made.

Regular Sampling

Although we began this series on sand separation more than a year ago with special emphasis on the desirability of regular screen sampling of the raw material, it should be especially emphasized again in connection with effective, or efficient operation of vibrating screens. Screen tests of sand can be made so readily by any intelligent plant employee, that there is little excuse for not making a test at least once a day, if for no other reason than to check the uniformity of the material fed to the plant, as well as the uniformity of the product. Any very considerable and persistent increase in the oversize, meaning in this instance material exceeding the size of the screen

By NATHAN C. ROCKWOOD

opening by one-half, will decrease the capacity of the screen, or if the same amount of material is fed to it, will decrease the efficiency.

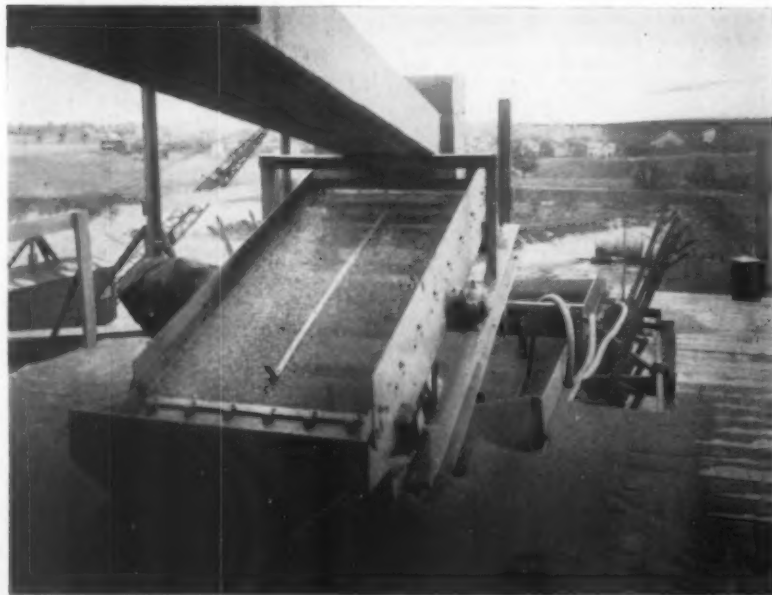
However, under ordinary circumstances, it does not pay to be too particular, for your sample is never a true sample, and no two laboratories, or men operating a set of sieves, would get identical results from different splits of any one sample. For example, STANTON WALKER, in a report to the National Industrial Sand Association in 1944, discussing sieve analyses of 17 different portions of each of four samples, which were made in one laboratory, said that determinations of sizes No. 20 to No. 30, ranged from 4.4 to 6.8 percent (range 2.4); of No. 30 to 40, from 46.6 to 50.3 percent (range 3.7); of No. 40 to No. 50 from 47.8 to 53.8 percent (range 6.0); No. 50 to No. 70, from 39.0 to 45.4 percent (range 6.4); No. 70 to No. 100, from 19.4 to 27.0 percent (range 7.6). This was a foundry sand, and sieve-tested by an expert. From these data it would appear that tests at a commercial sand

plant might easily have a percentage variation of plus or minus 5 percent in any of the size determinations below 30-mesh without causing any concern for the product—the variation is as likely to be caused by selection of the sample as by changes in the raw material itself.

Need Performance Data

Since testing sieves, expertly handled, give such a variety of results on splits of the same general sample, it is obvious that specification limits on various critical sizes of concrete sand should be interpreted with an eye to possible and practicable screening practice, as we hope they are in most instances. So, what is practicable commercial screening? On this subject there appears to be little available data in the aggregates industry. That many vibrating screen installations are not giving wholly satisfactory performance sometimes looks obvious, but what are the goals to be attained? In other words, what are feasible commercial limits to meeting size specifications?

We would be pleased to have readers send us any data they may have on commercial operation of vibrating screens. At this writing we do have the following from HAROLD POLLITZ, chief engineer, Iowa Manufacturing Co., which makes the Cedarapids vibrating screen: "In a recent investigation of the efficiency of vibrating screens in Arizona, our field men checked a goodly number of competitive screens. They found the efficiency of most all the screens to be less than 75 percent; usually about 65 percent. By that we mean the carry-over of each deck on a vibrating screen was usually between 25 and 35 percent of a size that should have gone through that particular screen. Very few screens can approach the 90 percent efficiency you mention. The reason for this is that different sizes of material in reality require different types of vibration. It is for this reason producers and users think a three-deck screen is the proper thing to use, while in reality it is not a very good practice. The results are inefficiencies that have to be improved by changing the screen cloths to different mesh openings; for example, if $\frac{1}{8}$ -in material is wanted $\frac{1}{8}$ -in. square mesh may have to be replaced with cloth having $\frac{1}{8}$ - x $\frac{1}{2}$ -in. mesh."



Sand screening operation. Feed is from launder, above, the throughs going to a sand settling tank

SAND SEPARATION

It may be added, in the way of explanation, that aggregate screening operations in Arizona are conducted under the most favorable conditions—that is, with dry materials, in probably nearly all instances.

Analysis of Screening Process

To summarize some of the various steps in the screening process, and to emphasize again the shortcomings of any strictly theoretical or mathematical analysis of the screening process, we quote from a letter by A. E. CONOVER, Robins Conveyors, Inc., who is recognized throughout the industry as having given this subject much study and investigation:

"The screening process consists of two separate operations: (1) Stratifying the bed of material by agitation, to bring the small particles to the bottom; (2) passing the undersize particles through the screening medium. To accomplish the first step it is necessary to impose on the bed of material a sufficiently violent force to actually displace it and open up the voids, so that the small pieces can work their way to the lowest level. In a vibrating screen this force is produced by the screen frame itself, which therefore must have sufficient mass to generate through its action a force great enough to produce the desired result. To accomplish the second step it is necessary to keep the bed of oversize pieces moving across the cloth to prevent marginal-size pieces from plugging or blinding the openings, so that these openings are successively available to pass more undersize. The type of vibration generated by the screen has an important effect on the travel of the oversize. Some motions, such as an inclined straight line or a thin ellipse, have a definite conveying effect, so that the screen can be set horizontally; a motion such as a wide ellipse or circle in forward rotation (with-flow) has a pronounced conveying action, and in order to speed the rate of travel, the screen is set at a relatively flat angle; a motion such as counter-rotary circle (counter-flow) has a definite retarding effect and a steeper slope is required so that gravity plays a more pronounced part.

"It should be remembered that the slope of any type of screen (whether nominally 'horizontal' or 'sloping') depends on the work to be done, since the tonnage, size and physical characteristics of the oversize material all have a very definite effect on the slope needed to discharge it.

"Marginal-size pieces are kept from plugging the screen openings by imparting to them an ejecting force, normal (at right angles) to the screen surface, and thus counteracting gravity. As a matter of fact, the method of imparting this force is as

important as, if not more important than, its amount. Larger openings require a larger amplitude and proportionately less force is needed.

"The most efficient screening takes place on the top deck (of a multiple-deck screen). The ideal plant arrangement, when producing several sizes of products, is a series of single-deck screens. Space limitation often precludes this arrangement, however, and double- or triple-deck screens must be used. Normal capacities of lower decks must be discounted somewhat since they are fed progressively along their length and their entire area does not have a chance to work on the entire feed. When only one size is being made, a double-deck screen should be used only (1) when the feed contains large and heavy particles, in relation to the size of the cloth mesh; (2) when the feed contains more than about 60 percent oversize. This is because the first screen operation—stratification—will be the major operation, and it is more economical to thin the bed on the screening surface by using a scalping deck above it."

Science Ends—Art Begins

Still quoting Mr. Conover: "It is when we come to the problem of capacity and efficiency of sizing, that screening rapidly departs from any semblance of science, and soars into the stratosphere of the arts. Any chart or table set up to relate tons per hour through one square foot with size of opening, will necessarily be rigidly limited by many conditions which must or must not exist. For example, capacity varies with the following operating conditions, among others, close sizing, scalping, washing, dewatering, rescreening, etc. Capacity also varies with the following conditions of material, weight per cu. ft., shape of particles, percentage of moisture, size analysis, etc. Capacity also varies with the shape of the screen opening, whether square, rectangular, slotted, round, or hexagonal. Capacity is affected by the screen surface, smooth or rough; by the relation between size of wire and size of opening. The use of stainless steel or other non-corrosive wire will influence capacity under certain conditions in the smaller meshes. Of course, some of the limitations noted above are more pronounced in some ranges of openings than in others. They do give some idea of the impossibility of evolving formulas that can be reasonably accurate under more than a limited set of conditions.

"There is some divergence of opinion," continues Mr. Conover, "on effect of area of screen surface on capacity. Any one will readily admit that capacity varies directly with width. That is, if you have a 4- x 8-ft. screen operating at its maximum capacity for maximum efficiency, a 6- x 8-ft. screen will pro-

duce the same results with the feed increased 50 percent. Capacity does, however, vary directly with area and a 4- x 12-ft. screen would produce the same results as a 6- x 8-ft. screen.

"I will go into this in a little more detail, since it does not appear to be universally recognized. To bring out the point, I will have to introduce what I call the 'principle of screen saturation,' which I would state as follows: 'Every screen is capable of passing a theoretical maximum of graded material. The ultimate maximum would be reached if the material were so graded that no voids were present. The maximum for any given analysis is when a minimum of voids is present in the material actually passing through. The zone of saturation is where the material with minimum voids is passing through.'

"Due to the stratification of the bed of material on a screen, the entire amount of the smallest gradations in the feed is passed through before all the next larger size. This results in the undersize containing progressively higher percentages of larger sizes and higher percentages of voids, for each unit of length of the screen surface. When the discharge end is reached, the undersize consists entirely of marginal sizes. Stating this another way, the tons-per-hour passing through per unit of length of screen is progressively less as the discharge end is approached, and after the zone of saturation is passed, since the percentage of voids is increasing.

"Now assume the 4- x 8-ft. screen again. If the feed is increased 50 percent, how much longer should the screen be for the same efficiency, if the width is unchanged? The amount of extreme fines is increased 50 percent, so the length of the zone of saturation is increased 50 percent. Also, each increasingly larger gradation will produce a proportional increase in its maximum saturation zone requirements. Therefore, since all these increments will be increased by 50 percent, their sum, equal to the length of the screen will be increased 50 percent. Therefore the capacity of a screen is directly proportional to its length as well as its width—in other words, to its area."

Screens vs. Hydraulic Separation

It has been shown in this series that it is feasible to screen sand to 30-mesh. Finer sizes, unless the material is dry, probably must still be separated by hydraulic methods. Modern versions of hydraulic devices will be discussed in later issues—also the very important problem of blending. Hydraulic methods have an advantage in that blending fine sand with coarser sand for concrete fine aggregate is more readily accomplished; and doubtless this is a factor in choosing hydraulic methods, where screening alone could accomplish a satisfactory separation.

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Recovering Waste Heat from Stack Gases

Design waste heat boiler installation and apparatus to feed raw material to provide a constant flow coordinated with rate of coal firing

By JUAN MASO BULBENA*

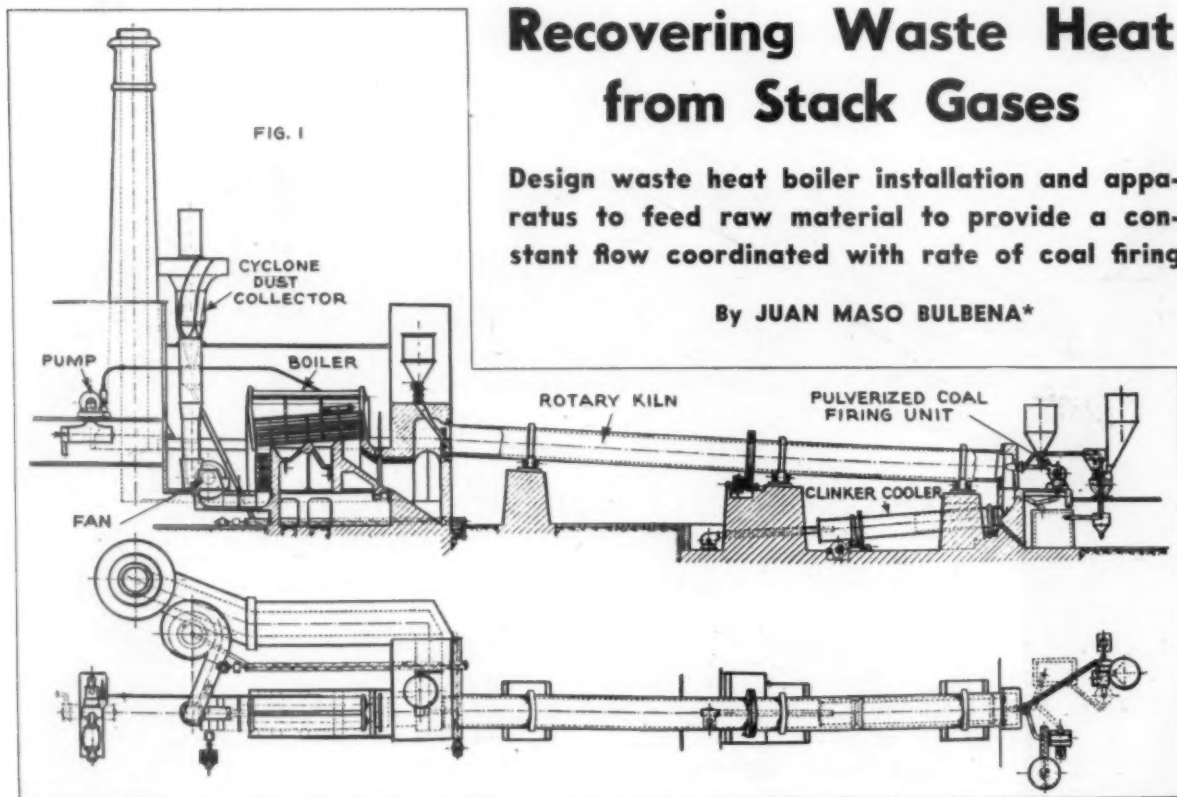


Fig. 1: Rotary cement kiln installation with waste-heat boiler and turbo-generator to produce power

ONE of the most important factors in cement manufacture is the energy cost to operate the various machines and apparatus. Modern improvements permit the operation of cement plants at a relatively small cost insofar as energy is concerned. American and European engineers have been constantly at work trying to obtain a reduction in fuel consumption in the cement industry with promising results.

In the dry process some manufacturers (European) recommend the "Lepol" calcination system as indicated by the large number of installations now in existence, or being set up, despite the obstacles and great cost involved, especially in war time. This is explained by the thermal economy of this system, resulting in low fuel consumption, a particularly desirable condition when coal is scarce.

Installations of modern systems of heat recovery have made it possible to lower stack gas temperature from 400 deg. C in the wet process and 600 deg. C in the dry process to about 100 deg. C.

*Industrial Engineer, Cemento y Hormigon, Barcelona, Spain.

Waste Heat Boiler System

In the accompanying illustrations may be seen the equipment designed to recover waste kiln gases for power generation, and the provision for feeding a constant flow of raw material to the kiln. Fig. 1 shows a typical waste heat boiler installation with this equipment in which not only the stack gases are recovered but also the clinker heat to dry the pulverized coal for firing the kiln. A centrifugal dust collector (cyclone) has been provided to recover most of the material blown out by the forced draft.

Air admitted through points other than the clinker cooler is detrimental to high efficiency. Therefore, it is important to keep the hood in close contact over the ends of the kiln and cooler. It also is important to keep the space between the kiln and the dust chamber air-tight.

For firing the kiln, the usual stack draft is used and the combustion gases are drawn out by means of an aspirator placed next to the boiler, until the latter reaches the necessary pressure at which time the turbo-generator may be started for energy production.

All the boiler doors close tightly,

preventing air leakage. The only serious leakage point is the inspection chamber between the kiln and the stack. If due precautions are not taken, air may leak in and decrease the plant output. (see Fig. 1)

To start the kilns, cooler, coal injector and aspirator, an auxiliary source of energy must be supplied, which also can be used for lighting and other services when the kilns are not operating. The plant could have an entirely independent waste heat recovery system, making it possible to start the plant with an auxiliary coal burning furnace by means of which the boiler could obtain its initial pressure.

Many cement manufacturers believe that the two systems combined, rotary kiln cement manufacture and power generation, offer some difficulties, kiln burning requirements not being balanced with the power demand. Proper efficiency, however, depends on the correct performance of the kiln, providing production is constant or nearly so.

Raw Material Feeder

Kiln firing must be in balance with raw material feed. To solve this problem, a system has been devised

whereby the right amount of raw material is fed to the kiln. Fig. 2 shows this raw material feeder system. Its principal feature is a rotor, with several partitions or chambers which move at the same velocity as the kiln itself, causing the rotation of a bladed wheel mounted on a set of tight bearings. The rotor partitions and the wheel blades are always in close contact. The rotor consists of a steel axle with longitudinal slots. Circular plates are mounted on the axle by means of screws and nuts. These plates have radial slots which coincide at their inner end with the axle slots. Partition walls consist of steel sheets placed vertically in the slots and fastened in position by spot welding. The steel sheets are subject to wear but they can be replaced at a small cost.

The feeder is a gray-iron casting and, as far as wear is concerned, the bladed wheel assembly affords a tight enclosure, and it would not matter if the portion in contact with the material should wear out a little. This would be quite dangerous on the opposite side of the machine, because the raw material, when hot, acts like a liquid and it may leak out through any small opening. To avoid this danger, the cylindrical portion on this side is provided with a removable lining mounted on a door, which can also be used to inspect the operation and to remove any foreign material that may get in and clog the rotor. In such cases, all the operator has to do is to close the upper inspection door, operated by flywheel and screw, to stop the flow of material and the rotor is given a turn in the opposite direction to dislodge the foreign body.

Operation of the feeder is by means of a pawl wheel (ratchet) mounted on the rotor axle, actuated by a connecting rod which in turn is moved by an eccentric plate. This arrangement permits varying the speed of the rotor. As the eccentric plate turns at the same speed as the rotary kiln, it will be noted that the feeder can be adjusted to any operating condition.

The feed bin should not be too large to keep the material from clogging. It must be cylindrical at the top and conical shaped at the bottom with an angle not less than 60 deg. The height of the material in the bin should be kept constant or nearly so, and a screen must be placed over the bin to keep any foreign body from coming into the feeder.

If all the necessary precautions are taken, the machine will function so smoothly and uniformly that a revolution counter connected to the rotor axle will give, by means of a coefficient, quite accurate information as to the amount of material that has entered the kilns.

The waste heat boiler has a large

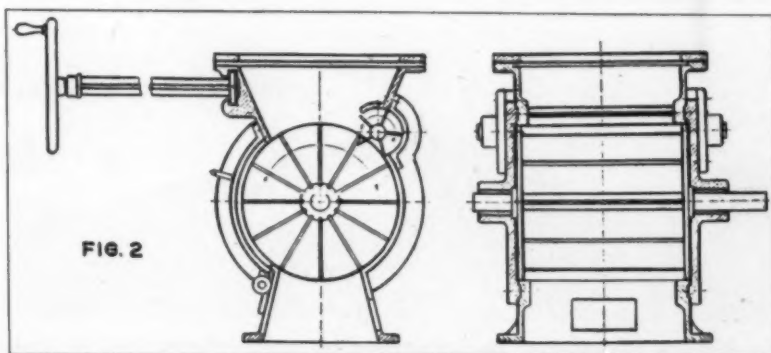


Fig. 2: Side and end elevation of raw material feeder designed for constant flow synchronized with kiln speed

heating surface to take care of oscillations that may occur in the thermal source. If these changes were of considerable magnitude, one of the large units in the plant should be shut off.

For maximum efficiency, the boiler must be equipped with an economizer and a superheater. It would be advantageous to have another economizer with forced draft to recover waste heat to the point where the exhaust gases leaving the stack would be at a temperature not greater than 100 deg. C.

Cement Production

DECLINE in production and demand for cements which began in 1943 continued through 1944. Total production for 1944 was 92,152,399 bbls. according to Bureau of Mines representing a decrease of 32 percent from that produced in 1943. This figure also includes production of natural, masonry, puzzolan cements and hydraulic lime which accounts for 1,246,703 bbls. of the total. The problem of labor shortages and labor turnover greatly increased costs of production. Fixed costs per barrel of output such as capital investment, plant depreciation, cost of supplies, fuel, repair parts, also continued to increase as the volume of production fell with the declining demand for cement. To this end the O.P.A. amended prices three times in 1944 to allow increases in certain areas. The table below shows the production, shipment and price of portland cement in 1944, by types:

In spite of manpower shortages and shrinking markets the plants as a whole have been kept in good operat-

ing condition and the industry is therefore ready to take advantage of post-war demands, which, according to the F. W. Dodge Corp. will exceed 15 billion dollars for the building industries in the region east of the Rockies. Furthermore, the planned three-year postwar highway construction program will exceed three billion dollars. The volume of cement used for these kinds of prospects is indicated by the figures presented by the P.W.A. in studies made to determine the proportion of the construction dollar spent for cement. These studies show that for construction of buildings the percentage is 4, for sewage disposal systems 9, for streets and roads 10, and for reclamation projects 11.

The ruling of the Federal Trade Commission abrogating the present point price system may lead to greater decentralization of cement plants, according to the report. A closer control of raw materials and more exact specifications will be expected, but the expected sellers market for the next few years will probably make the present five standard types acceptable during that period. Although increased production tends to lower prices, no reduction is expected in the immediate postwar period because of increased costs in fuel and power, and the probable increase in cost of labor.

Bulk Cement Cars

DENVER & RIO GRANDE WESTERN RAILROAD has received authority for the purchase of 25 all-steel covered hopper cars for bulk cement loading to be built by General American Tank Car Co.

| Kind | Production, Barrels | Shipments Barrels | Shipments Value | |
|--|------------------------|----------------------|--------------------|---------|
| | | | Total | Average |
| General use and moderate heat (Types I and II) | 83,576,685 | 86,933,387 | \$135,564,313 | 1.56 |
| High-early strength (Type III) | 5,135,264 | 5,190,092 | 10,278,215 | 1.98 |
| Low-heat (Type IV) | 441,368 | 400,998 | 554,684 | 1.38 |
| Sulfate-resisting (Type V) | 100 | 1,647 | 3,280 | 1.99 |
| Oil-well | 938,872 | 931,371 | 1,802,361 | 1.94 |
| White | 302,543 | 322,443 | 1,303,440 | 4.04 |
| Portland-puzzolan | 290,013 | 244,858 | 337,250 | 1.38 |
| Miscellaneous | 220,851 | 247,085 | 514,211 | 2.08 |



Overall view of sand and gravel plant, showing revolving screen, sand drag below, and truck loading bins to the left



Two views of the ramp to dump raw material to long conveyor inclining up to screening plant

Screening and Washing in One Operation

J. Fred Smith Gravel Co., Dallas, Texas, operates semi-portable plant to cut down haulage distance

By H. E. SWANSON

SAND AND GRAVEL operations in Texas, where the deposits are shallow and not continuous, necessitate a long haul from pit to plant unless movable washing and screening equipment enable the plant to follow the deposit, or move from one deposit to another. While not a portable plant in the strict sense of the word, the plant operated by the J. Fred Smith Gravel Co., Dallas, Texas, is movable in that it can be set up close to the deposit as the distance between pit and plant increases to uneconomical distances.

This plant is steel constructed, simple in design and operation, and can operate to capacity of 500-cu. yd. per day with a crew of six men.

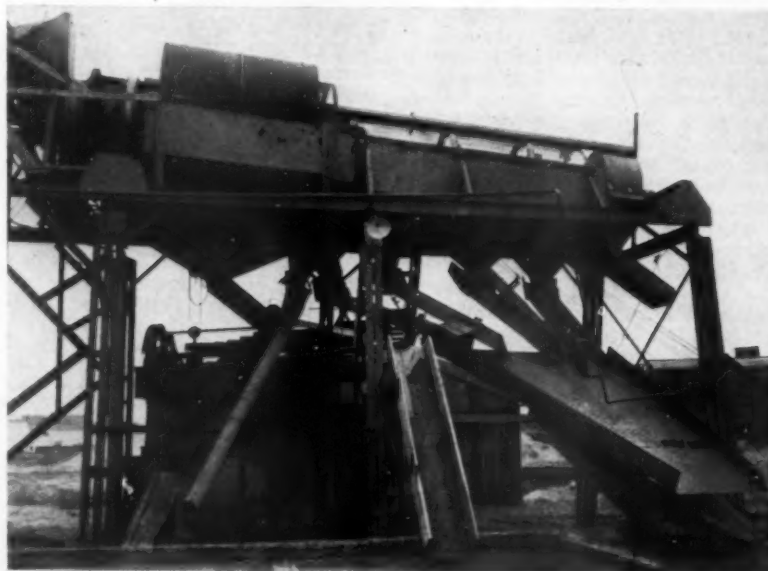
Screening Operation

Overburden, averaging 6 ft. in thickness overlies 6 to 7 ft. of sand and gravel. Stripping of overburden and reclaiming of sand and gravel is handled by a Bucyrus-Erie, gasoline-engine-powered dragline with a 1½-cu. yd. bucket. Material is loaded on motor trucks which transport it to the plant. A ramp is provided leading to a hopper for delivery to the belt conveyor via a feeder. A grizzly constructed of rails spaced 3 in. apart allows trucks to dump directly into the hopper, as well as scalping oversize stone. Material is fed to a 24-in. Link-Belt conveyor, 80 ft. centers, for delivery to the screens. A 10-hp. G.-E. electric motor powers the feeder and conveyor. A housing, halfway up the belt, is provided for a picker, who removes clay balls, etc.

The conveyor discharges to a trommel screen which has five sections with different sized openings for gravel sizing and two sand jackets for sand sizing. This is the only screening done in the plant, the single trommel ably sizing the materials. Thus, by a single screening operation, finished gravel sizes are sent to bins and sand is chuted to a sand

drag. Water for washing is received from a nearby abandoned pit and carried through an 8-in. pipe from the pit to an Allis-Chalmers pump. This pipe is 200 ft. long. The pump, rated at 800 g.p.m., sends water through a 5-in. pipe, 70 ft. long, to the screens. It is powered by a 20-hp. Allis-Chalmers electric motor. The

(Continued on page 100)



Showing chute discharge from rotary screen to pits. Sand discharges to the left to sand drag by means of chute

Laboratory Calculations By Tables

Application of tables to the calculation of clinker or cement compounds and to the calculation of amounts of admixtures at grinding mills are time savers

By C. J. KNICKERBOCKER

IT IS OFTEN DESIRABLE to provide inexperienced laboratory operators with a means of performing required calculations in a minimum of time and with improved accuracy. Graphs, charts, slide rules and tables are most commonly employed for this purpose.

The tables given assist in performing two of the most often encountered calculations. The accuracy secured is comparable with that obtained by other means and the solution time is reasonably short.

Originality is not claimed for this method of presentation inasmuch as it is an obvious short-cut to the solution of the given equations.

Cement Compounds

A rapid means of calculation of clinker or cement compounds is afforded by Table 1. The columns of values are in the order of their use in the computations.

The equations given are those required by A.S.T.M. Specifications for Portland Cement (C150-44).

The example solution illustrates the operation:

SiO₂ — 20.8%
Al₂O₃ — 6.7%
Fe₂O₃ — 2.7%
CaO — 65.6%
SO₃ — 1.8%

| | | | |
|--------------------|--|---------------------|--|
| C ₂ S | | | |
| 267.0 — #1 | | 158.1 — #2 | |
| (—) 212.1 | | 45.0 — #3 | |
| | | (+) 3.85 — #4 | |
| 54.9 | | 51.2 — #5 | |
| (C ₂ S) | | | |
| | | 212.07 | |
| C ₂ S | | | |
| 59.7 — #6 | | 40.7 — #7 | |
| (—) 41.4 | | (+) 0.68 — #7a | |
| | | 41.38 | |
| 18.3 | | | |
| (C ₂) | | | |
| C ₂ A | | (C ₂ AF) | |
| 17.8 — #8 | | 8.2 — #10 | |
| (—) 4.6 — #9 | | (C ₂ AF) | |
| | | | |
| 13.2 | | | |
| (C ₂ A) | | | |

The tables can be readily extended to include compositions not listed.

The computations can be checked for correctness by comparing the total of the oxide analysis with the total of the four determined compounds and the CaSO₃ value found in column 11.

Additive Materials

Table 2 is convenient for reference when it is necessary to calculate the amount of material to add to a feed entering the grinding units. The table

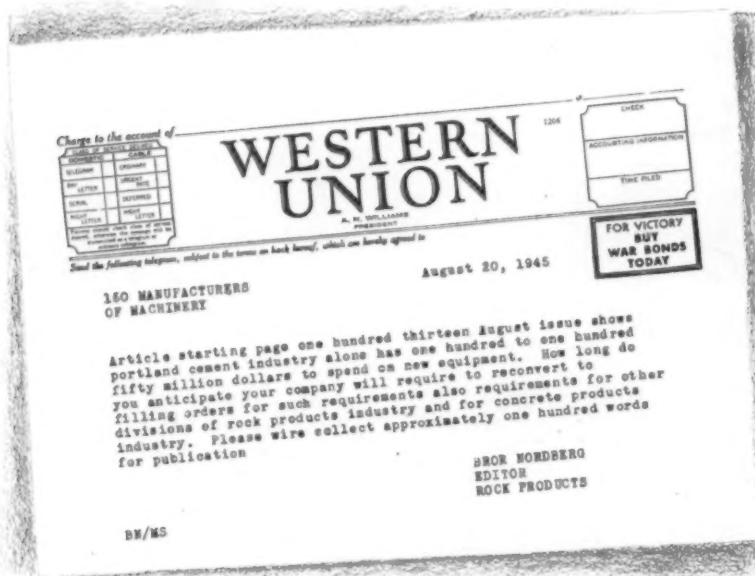
(Continued on page 100)

| —1— (4.07 CaO) | —2— (7.6 SiO ₂) | —3— (6.72 Al) | —4— (1.43 Fe) | —5— (2.85 SO ₃) | —6— (2.87 SiO ₂) | —7— (0.745 C ₂ S) | —7a— | —8— (2.65 Al) | —9— (1.69 Fe) | —10— (3.04 Fe) | —11— (1.7 SO ₃) |
|-------------------|--------------------------------|------------------|------------------|--------------------------------|---------------------------------|---------------------------------|----------|------------------|------------------|-------------------|--------------------------------|
| 63.0-256.4 | 19.5-148.2 | 4.5-30.2 | 2.0-2.86 | 1.5-4.27 | 19.5-56.0 | 30-22.6 | 0.1-0.07 | 4.5-11.9 | 2.0-3.38 | 2.0- 6.1 | 1.5-2.55 |
| 1-256.8 | 6-149.0 | 6-30.9 | 1-3.00 | 6-4.55 | 6-56.2 | 31-23.4 | 2- .15 | 6-12.2 | 1-3.55 | 1- 6.4 | 6-2.71 |
| 2-257.2 | 7-149.7 | 7-31.6 | 2-3.14 | 7-4.84 | 7-56.5 | 32-24.1 | 3- .23 | 7-12.4 | 2-3.72 | 2- 6.7 | 7-2.89 |
| 3-257.6 | 8-150.5 | 8-32.2 | 3-3.28 | 8-5.12 | 8-56.8 | 33-25.9 | 4- .30 | 8-12.7 | 3-3.89 | 3- 7.0 | 8-3.05 |
| 4-258.0 | 9-151.2 | 9-32.9 | 4-3.42 | 9-5.41 | 9-57.1 | 34-26.6 | 5- .38 | 9-13.0 | 4-4.03 | 4- 7.3 | 9-3.23 |
| 5-258.4 | 20.0-151.9 | 5.0-33.6 | 5-3.57 | 20.0-5.69 | 20.0-57.4 | 35-26.4 | 6- .45 | 5.0-13.2 | 5-4.22 | 5- 7.6 | 2.0-3.40 |
| 6-258.8 | 1-152.7 | 1-34.3 | 6-3.71 | 1-5.98 | 1-57.7 | 36-27.1 | 7- .53 | 1-13.5 | 6-4.40 | 6- 7.9 | 1-3.57 |
| 7-259.2 | 2-153.5 | 2-35.0 | 7-3.85 | 2-6.26 | 2-58.0 | 37-27.9 | 8- .60 | 2-13.7 | 7-4.56 | 7- 8.2 | 2-3.74 |
| 8-259.6 | 3-154.3 | 3-35.6 | 8-3.99 | 3-6.55 | 3-58.3 | 38-28.7 | 9- .68 | 3-14.0 | 8-4.73 | 8- 8.5 | 3-3.90 |
| 9-260.0 | 4-155.0 | 4-36.3 | 9-4.14 | 4-6.83 | 4-58.6 | 39-29.4 | | 4-14.3 | 9-4.90 | 9- 8.8 | 4-4.08 |
| 64.0-260.5 | 5-155.8 | 5-37.0 | 3.0-4.29 | 5-7.12 | 5-58.8 | 40-30.2 | | 5-14.6 | 3.0-5.07 | 3.0- 9.1 | 5-4.25 |
| 1-260.9 | 6-156.5 | 6-37.6 | 1-4.44 | 6-7.40 | 6-59.1 | 41-30.9 | | 6-14.8 | 1-5.24 | 1- 9.4 | 6-4.42 |
| 2-261.3 | 7-157.3 | 7-38.3 | 2-4.57 | 7-7.69 | 7-59.4 | 42-31.7 | | 7-15.1 | 2-5.41 | 2- 9.7 | 7-4.59 |
| 3-261.7 | 8-158.1 | 8-39.0 | 3-4.72 | 8-7.97 | 8-59.7 | 43-32.4 | | 8-15.4 | 3-5.58 | 3-10.0 | 8-4.76 |
| 4-262.1 | 9-158.8 | 9-39.6 | 4-4.86 | 9-8.26 | 9-60.0 | 44-33.2 | | 9-15.6 | 4-5.75 | 4-10.3 | 9-4.93 |
| 5-262.5 | 21.0-159.6 | 6.0-40.3 | 5-5.00 | 3.0-8.55 | 21.0-60.3 | 45-33.9 | | 6.0-15.9 | 5-5.92 | 5-10.6 | 3.0-5.10 |
| 6-262.9 | 1-160.3 | 1-41.0 | 6-5.15 | | 1-60.5 | 46-34.7 | | 1-16.2 | 6-6.09 | 6-10.9 | |
| 7-263.3 | 2-161.1 | 2-41.7 | 7-5.30 | | 2-60.8 | 47-35.4 | | 2-16.5 | 7-6.25 | 7-11.2 | |
| 8-263.7 | 3-161.8 | 3-42.3 | 8-5.44 | | 3-61.1 | 48-36.3 | | 3-16.7 | 8-6.42 | 8-11.5 | |
| 9-264.1 | 4-162.6 | 4-43.0 | 9-5.58 | | 4-61.4 | 49-37.0 | | 4-16.9 | 9-6.59 | 9-11.8 | |
| 65.0-264.5 | 5-163.4 | 5-43.7 | 4.0-5.72 | | 5-61.7 | 50-37.7 | | 5-17.2 | 4.0-6.76 | 4.0-12.2 | |
| 1-265.0 | 6-164.2 | 6-44.4 | 1-5.86 | | 6-62.0 | 51-38.4 | | 6-17.5 | 1-6.93 | 1-12.5 | |
| 2-265.4 | 7-165.0 | 7-45.0 | 2-6.00 | | 7-62.3 | 52-39.2 | | 7-17.8 | 2-7.10 | 2-12.8 | |
| 3-265.8 | 8-165.7 | 8-45.7 | 3-6.15 | | 8-62.6 | 53-40.0 | | 8-18.0 | 3-7.27 | 3-13.1 | |
| 4-266.2 | 9-166.4 | 9-46.4 | 4-6.29 | | 9-62.9 | 54-40.7 | | 9-18.3 | 4-7.44 | 4-13.4 | |
| 5-266.6 | 22.0-167.2 | 7.0-47.0 | 5-6.43 | | 22.0-63.1 | 55-41.5 | | 7.0-18.5 | 5-7.60 | 5-13.7 | |
| 6-267.0 | 1-168.0 | 1-47.7 | 6-6.57 | | 1-63.4 | 56-42.2 | | 1-18.8 | 6-7.77 | 6-14.0 | |
| 7-267.4 | 2-168.7 | 2-48.3 | 7-6.71 | | 2-63.7 | 57-43.0 | | 2-19.0 | 7-7.94 | 7-14.3 | |
| 8-267.8 | 3-169.4 | 3-49.0 | 8-6.85 | | 3-64.0 | 58-43.7 | | 3-19.3 | 8-8.11 | 8-14.6 | |
| 9-268.2 | 4-170.2 | 4-49.7 | 9-7.00 | | 4-64.3 | 59-44.5 | | 4-19.6 | 9-8.28 | 9- 9 | |
| 66.0-268.6 | 5-171.0 | 5-50.4 | 5.0-7.15 | | 5-64.6 | 60-45.2 | | 5-19.9 | 5.0-8.45 | 5.0-15.2 | |
| 1-269.0 | 6-171.7 | | | | 6-64.9 | 61-46.0 | | | | | |
| 2-269.4 | 7-172.5 | | | | 7-65.1 | 62-46.7 | | | | | |
| 3-269.8 | 8-173.3 | | | | 8-65.4 | 63-47.5 | | | | | |
| 4-270.2 | 9-174.0 | | | | 9-65.7 | 64-48.3 | | | | | |
| 5-270.7 | 23.0-174.8 | | | | 23.0-66.0 | 65-49.0 | | | | | |

(C₂S) 4.07CaO — (7.6SiO₂ + 6.72Al₂O₃ + 1.43Fe₂O₃ + 2.85SO₃)
(C₂S) 2.87SiO₂ — 0.754C₂S
(C₂A) 2.65Al₂O₃ — 1.69Fe₂O₃
(C₂AF) 3.04Fe₂O₃
(C₂F) (1.7Fe₂O₃ + 2.1Al₂O₃ — (4.767Al₂O₃)

Table 1: Cement and clinker compounds (use values to 0.10)

Plant Improvements



Manufacturers wire that reversion has been a simple matter and that they are ready to accept orders and make deliveries on reasonable schedules

Machinery Situation Is Favorable

WITH the tremendous post-war construction program ready to start and with the promise of what may prove to be an unparalleled industrial expansion in the offing, the rock products industry and the concrete products industry now face the job of placing their production facilities in order with minimum delay.

Machinery and equipment in any appreciable volume have been denied these industries so long that we sought the latest up-to-the-minute information available direct from manufacturers as to when delivery of long-sought equipment may be available. Under date of August 20, just a week after the Japanese war ended, we dispatched the telegram reproduced herewith to a selected list of principal suppliers of machinery and equipment for all branches of the rock products industries.

Manufacturers were generous in their response, and their comments were, in many cases, supplemented by practical suggestions and guidance for producers; for that reason, all wires received are printed in this article.

Reconversion for war by manufacturing industry was accomplished in remarkable haste, but it now becomes evident that suppliers were keeping their old customers in mind and that reconversion and plans for filling their requirements had proceeded at a fast pace.

The majority of machinery manufacturers had no real reconversion job to do, for their wartime activities consisted of furnishing military pur-

chasers with standard machinery, in many cases identical to machines required by civilian industry, or machines with relatively minor variations. Those that had to reconvert have done so almost overnight.

The general tone of the wires received is most encouraging. Not only may most types of machinery required by our readers be delivered within a reasonable length of time after purchase but some particular items may be secured immediately or on a quicker schedule than was possible before the war, according to the manufacturers themselves. Cancellations of war contracts have left stocks of certain standard items on hand in a few cases.

Many manufacturers express great optimism for the future of their business in these industries and some now have greater shop facilities and a fund of war-gained experience to better serve their civilian industry customers. A wider range of machinery capacities is coming available and entirely new units of machinery have been developed during the war.

The greatest backlog of machinery orders in history is on the books for some but practically all indicate that reasonably short delivery dates can be arranged on new orders. Foresighted producers of rock products and concrete products already are on the lists where the manufacturer followed the practice of booking orders while the war is on. The challenge is now up to producers to have their equipment needs scheduled. Those

who designed post-war plant expansion and rehabilitation in advance of the war's end will benefit first.

Manufacturers of machinery, equipment and supplies, replied to our telegram as follows:

Trucks, Tractors, Locomotives

"We have no conversion problems as we have been building locomotives for Government orders. Therefore, are ready now to build locomotives for industrial use without interruption."—Plymouth Locomotive Works, John A. Root, president.

"Ford resumed civilian production in April, 1944. Trucks now reaching market in increasing quantities. Expect to attain pre-war production level late this year, barring expensive labor difficulties or the development of materials shortages not now apparent."—Ford Motor Co.

"Our war production consisted chiefly of standard Mack units, consequently recent lifting of restrictions on civilian trucks presents no reconversion problem. Our production rest of this year will be at normal peacetime rate and expect 1946 to exceed our best prewar year."—Mack Trucks, Inc., Edwin M. Post, Jr., advertising manager.

"Regret unable to make any statement in connection with plant expansion or production. Plant reconversion work is under way full blast and wholly dependent on availability of machinery and supplies. Regret current policy forbids passing out any additional information."—Chevrolet

PLANT IMPROVEMENTS

Motor Division of General Motors Co., E. W. Berger.

"Our company will have no reconversion problem. We will not have any more than a normal amount of machinery to buy to put our plant in position for maximum production although deliveries will depend upon increasing manpower. Yet we are accepting orders for the various phases of the rock products industry."—The Gallion Allsteel Body Co., B. J. Heiser.

"Trackson is ready to deliver its Traxcavators and other tractor equipment in ever-increasing quantities for all divisions of the rock products industry. We have never been out of production on these machines but, like other manufacturers of dependable construction equipment, the military took most of the output of our plants. Terminations of military requirements leave us free to divert all our productive capacity into civilian channels so we confidently feel that within the matter of a few weeks our peacetime products will be flowing out in record quantities. Cancellation of order L-192 removes restrictions as to sales of tractors and tractor equipment and this constructive move on the part of W.P.B. further assists manufacturers to better serve their customers in a normal manner."—Trackson Co., W. H. Stiemke, president.

"G.M.C. truck and coach division has been building commercial trucks on W.P.B. allotment basis for several months and expects to be in production on pre-war volume basis before end of year. Company has no serious reconversion problem because of nature of war contracts which consisted of trucks and ducks. Commercial models now in production should meet majority of requirements of rock products industry and field stocks should make almost immediate delivery possible of standard production models by time rationing is lifted. G.M.C. anticipates 1946 will be biggest year in its history."—G.M. C. Truck & Coach Division, H. T. Dehart.

"Semi-trailers are still subject to rationing by the O.D.T. This means that a quarry or mine operator needing trucks or tractors and trailers cannot secure them without obtaining what the O.D.T. calls a Certificate of Transfer. This O.D.T. rationing has not been restrictive in recent months. Qualified applicants have had no great difficulty obtaining certificates. We are not yet permitted to ship semi-trailers unless our customer supplies an O.D.T. Certificate of Transfer. Since the receipt yesterday of the following telegram from the Washington headquarters of the Automotive Branch, 'Limitation Order L-1-E has been revoked effective immediately thereby removing all restrictions on the production of trucks and truck trailers,' we are prepared

to quote firm deliveries against the specifications of your readers. Easton quarry cars, truck bodies and semi-trailers are available for reasonable delivery."—Easton Car & Construction Co., Cott Farrell, vice-president.

Shovels, Draglines, Cranes

"This company is ready now to make shipment of excavating, hauling and concrete equipment, shop orders now booked to receive priority over future orders. Full-scale production and shipment schedules within a few days. Products include many new models tested and proven in military service now available for civilian use."—Koehring Co., E. J. Goes.

"Our company, builders of locomotives, power shovels, cranes and draglines, is now building its products for civilian use. No major reconversion problem confronted the Lima concern with the termination of war. The same products which were used to help win victory are now being built for release to domestic and foreign markets. Lima is prepared to give immediate attention to inquiries concerning shovels from $\frac{3}{4}$ cu. yd. to 5 cu. yd. capacity; cranes from 13 tons to 100 tons and draglines of variable capacities."—Lima Locomotive Works, Inc., Shovel and Crane Division, Roy K. Wills, advertising manager.

"Have no reconversion problem as all production has been on standard line of excavating and material-handling equipment for military. Only difference is that our customer changes. Can offer almost immediate shipment on practically all models and sizes from $\frac{3}{4}$ - to $1\frac{1}{4}$ -cu. yd. capacity having crane ratings up to 20 tons. Both convertible crawler excavators and pneumatic tire mounted Cranemobiles will be available in larger quantities than before war due to expanded facilities."—Bay City Shovels, Inc., A. W. Reidinger.

"This company is already filling orders for new equipment for rock and concrete products industry. Nearly all manufacturing facilities have been already reconverted to regular models and spare inventories."—The Marion Steam Shovel Co., M. E. Montrose, president.

"As our company produced for military agencies same products as produced during peacetime, no reconversion period was required. Therefore, are in position today to fill orders for all requirements of portland cement industry and other divisions of rock products industry as well as concrete products industry as we could fill in the past, in addition to now being able to furnish broader range of electric quarry shovels and other machinery on short delivery."—Harnischfeger Corp., F. Salditt, vice-president.

"Can accept commercial contract

for standard gauge railroad type locomotive cranes on approximately 45 to 60 days delivery."—Ohio Locomotive Crane Co., J. E. Robertson.

"You refer to an article in your August issue, which shows that the portland cement industry alone has one hundred to one hundred fifty million dollars to spend on new equipment. You ask how long our company will require to reconvert to filling orders for such requirements. Link-Belt Speeder Corp. has paused only long enough to take inventory. Since the equipment that we have made for the military service is the same as that used by civilian contractors and industry, there was no reconversion problem and we will be ready immediately to start filling our civilian orders."—Link-Belt Speeder Corp., B. V. Jones, advertising department.

Cement and Lime Plant Machinery

"We stand ready now to take care of such requirements of the cement and lime industries for our machinery and equipment with which we may be favored."—F. L. Smidth and Co., A. B. Zahn.

"We have no reconversion problems at our works since we have been supplying machinery to the rock products industries throughout the war period. Our facilities for manufacture of primary jaw and gyratory crushers, cone crushers, grinding mills, dryers, kilns, coolers, feeders, screens, etc., will require no changes. We are in excellent position to undertake manufacture of machinery for the crushed stone, gravel, lime, cement, alkali and other rock products industries."—Nordberg Manufacturing Co., D. A. Cheyette, manager, crusher and process machinery divisions.

"This company anticipated the heavy post-war purchasing by the cement industry which began after the fall of Germany and increased sharply after the surrender of Japan. A new plate shop will be in production by the end of the year and a favorable inventory position has been established. It is expected that with this increase in capacity, satisfactory delivery schedules can be maintained for Fuller-Kinyon and Airveyor conveying systems, clinker and cement coolers and rotary air compressors."—Fuller Co., G. K. Engelhart.

"This company has a relatively simple reconversion problem, for its role in the war effort, generally speaking, has been to manufacture its peacetime products. The company already has a substantial backlog of civilian orders in the cement mill and other divisions of the rock products industry. However, it has ample capacity for further orders and it plans to expand its business in this field."—Allis-Chalmers Manufacturing Co.

PLANT IMPROVEMENTS

"Our company has no reconversion problems and we are now building steam generating equipment for private industry including the portland cement industry. We expect to continue building high pressure steam generating equipment and are now able to start manufacture of any equipment which is required."—Edgemoor Iron Works, W. Locke.

"This company, even while engaged on war work, continued to plan for post-war needs of the cement and rock products manufacturers. Therefore, we have converted overnight and are at the present time scheduling and starting to manufacture on orders for Traylor machinery for requirements of the portland cement industry. This applies to new equipment as well as replacement parts. We are in an excellent position to give prompt service in filling orders for the machinery needs of the other divisions of the rock products industry."—Traylor Engineering and Manufacturing Co., H. S. Reichenbach.

"No changes are required in our manufacturing facilities to produce impact pulverizers for firing cement and other rotary kilns with pulverized coal. Automatic flame control is also available for use in controlling the kiln temperatures. Designs are now under way for improved mineral melting equipment for producing mineral wool for insulation purposes which includes mechanical charging, waste heat boilers and combustion air pre-heaters. Various arrangements are now available, ranging from simple, hand-charged, water-jacketed cupolas to complete automatically-charged steam producing units."—Whiting Corp., A. J. Grindie, manager, foundry equipment department.

"We are ready, in fact already in production on post-war orders for lime burning and hydrate plants for home and export to South America, Mexico, Russia, and Palestine. Because our products fitted war needs, reconversion was not difficult. We are prepared for and are ready for the greatest operations of our history. Our cement plant operations have been, during wartime, mostly repairs and accessories parts. However, we are in communication with old world and South America clients for new portland and white cement plants now. You will be deluged with inquiries for proper placements and will fill a large place in rehabilitation."—Lime & Hydrate Plants Co., W. J. Kuntz, president.

"Our parent organization, the Manitowoc Shipbuilding Co., has just commissioned the last one of 28 completely-equipped submarines and has practically finished other extensive naval construction. We have now available large shops with strictly modern machine tools for both heavy

and light machining and plate work staffed by experienced engineers and are prepared to make reasonably prompt deliveries consistent with release of construction materials for cement plant and similar equipment. Facilities for manufacturing speed-shovels, speedcranes and draglines have been greatly increased and we are rapidly clearing up backlog of orders for these items. Conversion well under way."—Manitowoc Engineering Works, A. W. Catlin.

"Our company has no reconversion problem and is in position to fill orders and make reasonable deliveries of continuous centrifugal classifiers for wet process cement closed grinding circuits as described in current Rock Products advertising."—Bird Machine Co., Harold Bugbee.

"As manufacturers of vacuum and pressure filters, we do not have any reconversion difficulties to face because most of our extensive war production jobs were based, in general, on well-known peacetime designs, and therefore did not upset production layout or facilities. We are today in a position to supply cement slurry filters for the cement industry as readily in the future as in the past."—Oliver United Filters, Inc.—M. R. O'Connell, advertising manager.

"We have completed millions of 81 millimeter shells, trench mortars, lathes, etc., as our contribution to the war effort. Our plant has also supplied millions of dollars worth of machinery for lend-lease. We are fully equipped and ready to manufacture complete cement plants, lime plants, crushing and boiler equipment. In other words, we are now reconverted and are turning out over two million dollars worth of cement and lime equipment for foreign delivery alone. We have the plant, we have the men, and are ready to give quick deliveries on our complete line. When the manufacture of munitions was contemplated our plant was so laid out that it has not been necessary to shut down for reconversion."—Kennedy-Van Saun Manufacturing & Engineering Corp., J. E. Kennedy, president.

Drilling Equipment—Air Tools

"During the war, the biggest part of our production was devoted to the manufacture of our standard line of equipment which was supplied to the armed services, mining and quarrying industry and for other companies which produce munitions and war material. Hence, we have no appreciable reconversion problem. You may assure your readers that we are in a position to give the rock products industry full and prompt service on rock drills, air compressors, pumps, engines, etc., for their post-war program and that we will cooperate with them in every way possible."—Ingersoll-Rand Co., G. W. Morrison.

"We have no reconversion problems

so we can provide immediate delivery on rock drills, wagon drills, core drills, spaders, air compressors, loaders, skip hoists and car pullers."—Sullivan Machinery Co.

"This company has no reconversion problem, according to A. H. Hruby, division sales manager. Known formerly as the Cleveland Rock Drill Company, the division has been making rock drilling equipment for the portland cement, rock products, and concrete products industries since 1906 and is prepared to make immediate delivery on practically all its products which include hand sinkers, drifters, paving breakers, wagon drills, and a complete line of accessories. The war has served only to accelerate the general improvement program which has been the parent company's policy since its founding over 50 years ago."—The Cleveland Pneumatic Tool Co., James E. Dillon, public relations.

"Replying to your telegram we have no reconversion problem as our standard products, pumps, air compressors, rock drills and associated equipment with few modifications were in heavy demand by the armed forces, their contractors and essential industry throughout the war. The end of the war and resultant cancellations were welcomed by us without exception as we have a heavy backlog of orders for peacetime activities, deliveries of which will be substantially improved as labor supply becomes more plentiful."—Gardner-Denver Co., R. H. Pearson.

Dust Collecting Machinery

"We are now in full production on post-war work, having completed all our war contracts 90 days ago. In the past year we have developed and patented a new type of cement cooler, a new type of axial flow cyclonic collector and made improvements on all our standard equipment, preparing for the postwar period. At the present time we are working on cement company orders for over a dozen different companies and have been working on repairs and improvements and plans for the cement, lime and rock products industry for the past six months."—Northern Blower Co., M. A. Eiben.

"Our facilities are now in full operation to supply dust control and collection equipment required by cement, concrete and other rock products industries. Equipment for some far-sighted industries already in process. Our district engineers are available to assist in planning effective installations. A helpful 20-page bulletin with engineering data is available for the asking."—The W. W. Sly Manufacturing Co.

"Will be glad to discuss any dust collection problems with engineers of the cement industry or other divisions of the rock products industry

PLANT IMPROVEMENTS

and are also in a position at this time to make delivery of equipment ten to twelve weeks after receipt of orders."

—Buell Engineering Co., Inc.

"Our facilities and equipment ready to supply dust control equipment as used and required by the rock products industries. Our production schedule will enable this company to produce at least four times more of this type of equipment than we were able to handle before the war. Our staff of sales engineers was increased to facilitate gathering of information so that we can submit intelligent data and recommendation promptly. Our advertising schedule was carried through in the rock products field during the war for just this purpose so that we would be recognized when this field again shows its usual activity."—Parsons Engineering Corp., L. J. Holzman.

"Our standard products widely used in war effort but, starting September first will be in full production on backlog of orders for reconversion. War contract terminations totaling three million dollars permit shifting all factory space and complete personnel to regular production of Rotoclone dust control and air filter equipment." — American Air Filter Co., Inc., J. R. McConnell.

Earth-Moving Equipment

"This company has no reconversion problem and is producing for civilian use only. Heavy-duty hauling equipment designed for quarries, cement and rock products industry can be supplied promptly on order. All military orders during war were for standard models which required no change of design or production facilities."—The Euclid Road Machinery Co., A. W. Lehman, advertising manager.

"No major reconversion necessary at LaPlant-Choate. Our company is already delivering large quantities of dozers, scrapers and rippers to all branches of industry through Caterpillar distributors and deliveries are expected to improve materially within 60 to 90 days. Many new and improved LaPlant-Choate products developed for military use are now available to speed work and cut costs for peacetime users." — LaPlant-Choate Manufacturing Co., Inc., S. L. Myers, vice-president and general sales manager.

"LeTourneau anticipates almost immediate return to filling equipment orders for pit and quarry industry. Very little if any problem of reconversion. Plans for near future include new equipment developments now in field-testing stage to be applicable to quarry haulage problems and sand and gravel production."—R. G. LeTourneau, Inc., Eugene E. Weyeneth, advertising manager.

"Like many other construction machinery manufacturers, we do not

have a reconversion problem. Ours is rather a condition which will involve shrinkage in production to meet postwar requirements which are without precedence in size or character. We at Pioneer are already in production in the manufacture of machinery for immediate and postwar use. Our backlog of civilian orders stands today at the highest level in our history. We enter the postwar period with full determination to keep employed the major portion of our wartime production employees, as well as to reabsorb into our organization the returned veteran who left our ranks to do his duty for his country."—Pioneer Engineering Works, Inc., Lewis W. Yerk, president.

Material-Handling Equipment, Crushing and Screening Plants

"We could answer your wire, in regard to the time required to reconvert to filling orders for cement industry, with one word—'IMMEDIATELY.' This answer might be elaborated by explaining that our wartime work has been to furnish conveyors, screens and bearings for handling bulk materials for war materiel. We have licked some tough problems and learned a lot that should be of value to our peacetime customers. So you can see that 'reconversion' as such has not been a major problem for us."—Stephens-Adamson Manufacturing Co., E. J. Patton, advertising manager.

"Not only during the entire war, but during the 'national defense' period, Barber-Greene has been furnishing its regular line of products for the war. These were principally our asphalt mixers, both travel and central plant units including B-G dryers, our bituminous finishers and Barber-Greene ditchers. These machines were used all over the world. Barber-Greene's did the paving of many of the airports in England, the airports on Guam and Saipan, and the military roads for the atomic bomb plants at Pasco and Oak Ridge. Other units included bucket loaders, belt conveyors, and some coal handling equipment. A few specific models were discontinued for the duration, but no reconversion is required. We are already in full production on all of our standard products."—Barber-Greene Co.

"The Conveyor Co. at the present time is entirely reconverted to peacetime products and is in position to fill promptly any orders from either the cement or rock products industry. We have been able all during the war period to supply our customers with their needs whenever they had the necessary priority."—The Conveyor Co., J. H. Williams.

"We have no reconversion problem because we never converted, continuing to make our regular line of materials handling machinery all during

the war period. Only in two or three isolated instances did we diverge, and that was only to meet some special requests of the U. S. Navy Department to help solve some peculiar materials handling problems. Robins is able to give immediate attention to orders demanding promptness, when no special types of our products are necessitated. We are ready to serve the entire aggregates industry promptly, because we realize the handicaps under which that industry has operated during the days of priorities. Knowing the urgency of its needs, we are going to give the industry extra special attention."—Robins Conveyors, Inc., E. M. Perrin, advertising manager.

"Our company has no reconversion problem in that our contribution to the war effort, in addition to supplying crushing and screening plants to the armed services, consisted of precision aircraft instruments and ordnance materiel for which facilities were provided. Quick deliveries of crushers, hammermills, screens, conveyors, feeders and other roadbuilding equipment are now possible except for occasional material shortages and this condition shows promise of early improvement." — Universal Engineering Corp., A. W. Daniels.

"Glad to report that cancellation of our Navy contracts for a large number of crushing plants together with other plans previously made for increased civilian production places us in a position where we can make quick delivery of many of the crushers and related items used in the portland cement, concrete products and other divisions of the rock products industry."—The Austin-Western Road Machinery Co.

"All our Government contracts have been terminated and we have already converted to 100 percent production for quarries, cement mills and gravel plants. This was no problem with us because all Government orders were for the same type equipment as we have always manufactured. We are now hiring and training additional production workers in order to quickly fill our backlog of orders and to build machinery for stock shipment."—Smith Engineering Works, D. D. Barnes, executive vice-president.

"Your interesting telegram received. Inasmuch as we have been building hundreds of crushing and screening plants for all allied armies during the entire war period our reconversion problem is rather simple and we are ready today to build and ship civilian requirements. The production 'know how' gained in military production assures the aggregates producer of getting more and better equipment in less time. There should be decided improvements in the de-

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Expands Association Activities

**National Crushed Stone Association directors create
Agricultural Limestone Division at Cincinnati meeting**

THE SEMI-ANNUAL meeting of the board of directors of the National Crushed Stone Association, at Cincinnati, Ohio, July 26, was concerned chiefly with changes in the Association's by-laws which would permit the establishment of an autonomous Agricultural Limestone Division. Such

they are also active members of it. In other words they vote as members of the Limestone Division in their Division meetings, but not in general meetings of the N.C.S.A., unless they are dues-paying members of N.C.S.A. Of course, many agricultural limestone producers are, and have been

of its own members to represent it officially on the board of directors of the Limestone Division. These ex-officio members of the two boards are also members of the executive committees of the respective boards. Otho M. Graves, although already a member of both boards, was chosen to be the official representative of N.C.S.A. on the Limestone Division's board and executive committee.

It was also discussed whether or not a similar provision should be made in the by-laws to permit organization of a bituminous-coated stone section, and to permit processors of crushed stone to become active members of the N.C.S.A. Opinion was about evenly divided, and for the present at least the development and use of information on bituminous paving materials will be handled by a technical committee of present active members rather than by a new section, which would include processors as well as producers.



Board of Directors of the National Crushed Stone Association in the midst of a serious debate on new by-laws

a division was tentatively organized at a meeting in Cincinnati on April 5 and 6, and was underwritten by the National Crushed Stone Association through a \$5000 contribution. Starting May 1, Henry A. Huschke was employed as managing director of the new Division. Since April, 82 active members (producers) and 20 associate members (dealers, etc.) have joined the Division.

The by-laws adopted by the National Crushed Stone Association give the Agricultural Limestone Division "the right and power to elect its own chairman and other officers; to elect its own board of directors and executive committee; to determine for itself the basis of dues, to control and determine the expenditure of its funds; to formulate and effectuate, and modify from time to time, as circumstances may indicate, a well-devised plan of procedure to advance the interests of the agricultural limestone industry and to do in general all things desirable and appropriate for its members."

The members of the Agricultural Limestone Division enjoy all the advantages of membership in the National Crushed Stone Association except that of voting, unless, of course,

from the beginning, members of the parent association. There are also several who are directors of both the N.C.S.A. and of the Agricultural Limestone Division.

Formal representation of the Limestone Division on the board of directors of the N.C.S.A. is provided for in that its chairman is ex-officio a member. Similarly, the board of directors of the N.C.S.A., appoints one

Engineering Activities

A. T. GOLDBECK submitted his progress report as engineering director, in which he said: "Our work has been directed along lines which, in general, have not departed from those which have been developed in the past. In the laboratory our activities have continued under a handicap due to the lack of adequate personnel and the difficulty of obtaining some supplies. But nonetheless useful work has been done, as will be shown later, in several fields including bituminous



From left to right: A. T. Goldbeck, engineering director; Milo Nice, director representing Manufacturers' Division; F. W. Schmidt, Jr.

CRUSHED STONE

pavements, concrete and miscellaneous testing. We have been engaged in the writing of specifications in such widely diverse structures as concrete dams and asphaltic concrete pavements. Travel and other restrictions have curtailed our technical committee activities and obviously we could not hold our schools for salesmen as during the past year. We have done work in the field in the investigation of the reasons for certain troubles and have attended conferences with state highway departments for the purpose of endeavoring to obtain equitable and fair specifications. In addition, we have engaged in technical writing for the industry."

Among other investigations of portland cement concrete it was developed that in one instance where objection was raised to stone sand as fine aggregate because of subsequent pavement sealing, caused by freezing and thawing, the use of air-entraining cement overcame the trouble. Another project is to determine the effect of gradation of aggregate on the density and durability of fine-



At the head of the conference table, from left to right: President, F. O. Earnshaw; Administrative Director, J. R. Boyd; Miss Gay, his secretary

of the engineering data accumulated through the years as they might.

E. W. BAUMAN, field engineer, reported briefly on his recent travels in eight eastern and southern states. The fact that he had not visited producers and engineers in more states

be in tight supply for some time to come.

"In view of the fact that many of the orders limiting the production of machinery and equipment used in the industry are being eliminated or removed, it is well to keep in mind the fact that there are no restrictions in Order P-56 that prevent an operator from purchasing capital equipment on an unrated basis. Accordingly, you are at liberty to purchase machinery and equipment without making application to the Mining Division for a preference rating if such equipment is available for delivery without preference rating. Some equipment is now in this category and there will undoubtedly be additions as the year progresses.

"As to the situation for next year, the War Production Board announced during the early part of July that by December 1, 1945, only military orders will carry preference ratings, which means that civilian production will operate next year without production restrictions and without affirmative priority assistance. The period between now and December 31 will constitute a transition period.

"The situation with respect to the continuance of manpower control is not encouraging, as there seems to be a definite disposition on the part of the War Manpower Commission to continue controls after the need therefor has disappeared.* One encouraging aspect, however, lies in the fact that the War Manpower Commission has, to a substantial degree, decentralized authority, leaving largely up to the regional offices the extent to which controls should be continued. In other words, for labor

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*EDITOR'S NOTE: The section of the report dealing with "Current Business" reviewed conditions as they then existed. Since the end of the War and the proclamation of V-J Day by President Truman, all WMC controls and many of the WPB controls have been removed.



A buffet luncheon in headquarters suite adds to informality and good fellowship

graded bituminous concrete pavement.

The N.C.S.A. laboratory has developed a device for measuring the anti-skid properties of various kinds of pavements, and paving mixtures. All-limestone aggregate has sometimes been objected to in bituminous pavements as being more slippery than one containing minus 10-mesh aggregate of a siliceous nature. At low speeds, which are the only ones possible in the present testing machine, little or no difference was found.

Trouble-shooting for member companies occupied a considerable part of the engineering laboratory work, but Mr. Goldbeck urged his directors and all members of the Association to bring more of their troubles to him, and to make more use of the laboratory facilities to advance the uses of crushed stone. Many members still have not made as much use

was largely because of increasing difficulties in traveling at all. Mr. Bauman, who was formerly an official of W.P.B., is also spending a considerable part of his time in Washington, contacting the various Federal agencies on Association and member company business.

Current Business

J. R. Boyd, administrative director, said in part: "In all probability there will be no basic changes in Order P-56 throughout the remainder of this year. A substantial improvement in the availability of most classes of machinery and equipment used by crushed stone producers may be anticipated during the fourth quarter, with the situation specifically improved as regards small shovels ($\frac{1}{2}$ -yd. and $\frac{3}{4}$ -yd.) and for all classes of tractors except the largest. Trucks and heavy duty tires will continue to



S. P. Moore, director of Agricultural Limestone Division, addresses the directors' meeting

Agricultural Limestone Producers Perfect Organization

FOLLOWING the semi-annual meeting of the board of directors of the National Crushed Stone Association at Cincinnati, Ohio, on July 26, the directors of the Agricultural Limestone Division met on July 27, to perfect the organization, which had its birth in the same city on April 5 and 6. Since the chairman of the Division, HOWARD M. THOMAS, Ft. Scott, Kan., was unable to be present, E. E. HAAPALA, Zumbrota, Minn., member of the executive committee, presided in the chairman's absence, doing an excellent job, and the necessary business was accomplished expeditiously.

Since the April organizing meeting, the committee in charge, of which OTHO M. GRAVES was chairman, had prepared a program in printed booklet form, which has been widely circulated in the industry and has brought in many members from all parts of the country. Briefly, this program is designed to: (1) Provide a permanent contact between producers and various government agencies; (2) assure cooperation in every feasible way with the Agricultural Adjustment Agency; (3) prepare appealing and persuasive types of cooperative advertising copy; (4) prepare educational film strips; (5) initiate publicity in the country newspapers and farm press; (6) send members periodic reviews or abstracts of the results of agricultural research; (7) cooperate with local groups and local associations; (8) cooperate with the Federal Reserve Banks, Production Credit Associations and other lending agencies.

As outlined elsewhere in this issue in the report on the transactions of

the board of directors of the National Crushed Stone Association, the parent association through changes in its by-laws has provided complete autonomy for this new Agricultural Limestone Division. Annual dues for active members (producers) have been set at \$1.25 per 1000 tons annually, with a minimum of \$25. For associate members (dealers, etc.) the annual dues are \$15. Membership is open to all, whether members of the National Crushed Stone Association or not. With a few slight changes to clarify the language the by-laws drawn up by the committee and printed in the booklet referred to were adopted.

Financing Farmers

The principal other business of the meeting was the hearing of reports on progress by the managing director of the Division, HENRY A. HUSCHKE,



Henry A. Huschke, managing director of the Agricultural Limestone Division reports to directors

and of the secretary, J. R. BOYD; the discussion of finances and adoption of a budget; consideration of ways and means to increase membership, and of the time and place for an annual meeting of the Division if possible, otherwise, of the board of directors.

Mr. Huschke has been on the job only since May 1, but it was apparent that he has made splendid progress. He has made many government agency contacts for members—with A.A.A., W.P.B., O.P.A., O.D.T. and others, getting assistance in procurement of trucks, tires, plant equipment, adjusting ceiling prices, etc. He has obtained copies of state laws regulating the sale of liming materials and summarized them in tabular form.

Most interesting and important has been Mr. Huschke's contacts with Federal Reserve Banks and their officials. He has found a rapidly developing interest on the part of bankers in helping to make farmers independent of A.A.A. or other government subsidies by making loans on liberal terms specifically for the purpose of soil conservation and more profitable farming practices. Moreover, Mr. Hutschke has started the wheels turning to get publicity in the farm papers for this, as yet, little known activity of the Federal Reserve Banks.

Government Controls

J. R. BOYD, secretary, reported along similar lines in his report to the board of directors of the National Crushed Stone Association, on wartime controls, such as W.P.B., W.M.C., etc. He referred particularly to the Gwynne bill (H.R. 2788) now before the Congress, which will require that charges against employers, for violation of the Wage and Hour regulations and other bureaucratic edicts which have the force of law, be brought within one year—a statute of limitation which would supersede present state laws, where these exist. Mr. Boyd urged producers to contact their congressmen in favor of this proposed law.

Mr. Boyd also called attention to a proposed act introduced in the Senate (S. 882) by Senators Hill and Bankhead, which would open wide to government corporations, or government-fostered cooperatives, the manufacture of fertilizers of all kinds, in competition with private industry.

The Agricultural Limestone Division, Mr. Boyd reported, already has over 80 active members and 20 associate members. His report included a tabulation of reported production in 1944 by A.A.A. regions, totalling nearly 19,000,000 tons, which on the present basis of dues would yield the Division an annual income of \$23,675. He concluded: "It must

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Economical Manufacture of QUALITY LIME

Part 2: Factors controlling gas flow and heat transfer in beds of broken solids

By VICTOR J. AZBE

may be in any volume depends first on the void space. Spheres closely spaced would have a void of only 26 percent. Broken stone in kiln would have a greater void space, as shown by several measurements of different sized material which have given the following results:

| | Percent Voids |
|---------------------------|------------------|
| Kiln Stone 1½ x 6-in..... | 47.6 |
| Uniform Stone 2½-in..... | 50.4 |
| Spalls ½ x 1½-in..... | 53.1 |
| Kiln Stone 3- x 6-in..... | 48.1 |

None of the figures calculated from a weighed and measured quantity of stone varies much from 50 percent, so we will assume this as the average figure, although voids may be a great deal more, or also less. In general, the greater the percentage of voids, the better the results and even only a five percent difference would cause a very great difference in performance.

Fig. 4, Curve "A," shows surface variation with stone size, assuming that voids are 50 percent of volume and that the individual pieces of stone are regularly sized, regularly placed and of near cubical shape, a condition which never is even approached in practice. Nevertheless, one can learn a great deal from this curve. The surface given is for one cubic foot of kiln or cooler volume, and it will be noted that it doubles as the size of stone halves. So a kiln filled with 4-in. stone will have twice the surface of stone exposed in a kiln containing 8-in. stone.

But in practice, we are not contenting with regularly sized and regularly shaped pieces, precisely placed, but rather random packing of irregularly shaped, mixed sizes. While at 50 percent voids the weight per cubic foot will remain the same, gross surface will be about 25 percent more than for pieces of regular size, such as spheres of the same weight. If stone is unusually slabby the surface will be even greater, but an assumption of 25 percent is best in our case.

But much can happen to the stone and particularly to lime passing through the kiln. Different shapes may pack differently. Much also depends upon the stability of stone or

TO CREATE CONDITIONS favorable to the highest capacity and best results with units such as vertical lime kilns, coolers and stone preheaters, one should understand, to an extent at least, the underlying governing laws, as well as the factors which may tend to controvert them. While performance of such units varies with the size of stone, surface of stone exposed and active, heat to be transferred, temperature difference prevailing and the heat transfer and heat penetration rates existing, are all dependent on many favorable and unfavorable secondary factors, which must be determined and taken into account. Therefore one should know surface variation with stone size and how much of this surface is likely to be active; also gas friction laws, their effect on draft required and heat transfer rate obtained. Other essential information includes amount of heat to be transferred for preheating, calcining, and lime cooling purposes, and what temperature differences are likely to prevail through the kiln under different capacity rates and different sizes of stone; then such other effects on heat transfer, as that of radiation from luminous gases, variations with turbulent flow, with varied velocity of gases and percentage of voids in the bed. The idle zone of the kiln, its ineffective space, must also be taken into account.

We propose here to deal with these matters in a theoretical fashion and of ideal conditions only in a limited degree, and place a greater emphasis on results and variations encountered in practice, which ordinarily depart considerably from the theoretical ideal. The plan is to use gas flow and heat transfer results of actual functioning units and whenever possible fit them into the formulas and charts.

The study is divided into sections in the following order:

1. Active surface available
2. Resistance to gas flow
3. Gas volumes encountered
4. Heat to be transferred
5. Temperature difference prevailing
6. Heat transfer rate from gas to solid

7. Heat penetration through the solid

8. Resume and final conclusions

Surface Available with Stone of Different Size, Shape and Degree of Packing

Size of stone or lime has a tremendous effect on performance of any kiln, cooler or preheater. As a whole, the smaller the size the better the results should be, but only when conditions conform to such small size, otherwise the results would be progressively poorer as size decreased, until they would dwindle to nothing.

In any such heat transfer apparatus, what actually works is surface. A big kiln is not one of big volume, but rather one of large surface. As the surface increases and stone becomes smaller, and advantage could be taken of this condition, a small kiln with small stone would really be a big kiln. However, the surface must be accessible to the stream of gases and must be active in itself.

The amount of surface that there

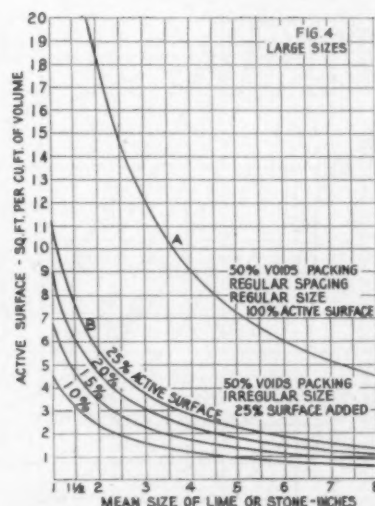


Fig. 4: Curve "A" shows surface variation with stone size, 100 per cent active surface. Curves in group B, show effect of irregular stone size

lime. Under load will it break up, and if it does break up will its corners crumble? It is the sharp corners which act like fingers that keep the pieces apart, the voids open, and the surfaces freely accessible to the flowing gas stream. There need not be much of this edge crumbling to affect the voids very greatly, and with the help of the crumbled-off fines to block off many of the channels, making much of the surface unavailable.

There also is variability in size. If the smallest piece is such that it keeps the largest apart, all well and good, but if the small pieces are less than any 20 percent of the large, the large pieces will close up and, if not general, at least local dense packing may result. The material which breaks from the edges of large pieces generally is much smaller than this 20 percent, filling void space and most of it blocking gas passages.

Therefore not all surface is available to heat transfer, nor all channels to gas flow. C. C. Furnas states, "Only 10 to 20 percent of cross-sectional area of a bed is effective in allowing passage of a gas and is effective in transferring heat, as the bed is filled with dead pockets and flow shadows."

If we combine this statement made by this rather thorough investigator with our own reasonings and field experience, considering further that irregular sized pieces have a surface larger than regular sized ones by about 25 percent, and that only 10 to 20 percent of this surface is active, we must assume that only 10 to 25 percent of the surface indicated by Curve "A", Fig. 4, would be functioning. Curves, group "B" of Fig. 4, give these values.

This chart shows the tremendous surface available with small compared to large stone, and as surface is so necessary and valuable, it is unfortunate that we have never exploited the use of small stone, except for experimental attempts. When stone is less than 3 in. and when it has the most surface for rapid heat transfer and high rate calcination, it is sent to waste, or to rotary kilns, which cannot take particular advantage of this surface.

Referring to Fig. 4, while regularly spaced and regularly sized 5-in. stone will have 7.1 sq. ft. of gross surface, active surface may vary from less than 1 to not more than 2½ sq. ft. per sq. ft. of volume, but in either case tending to rapid increase with reduction of size.

Resistance to Gas Flow

What affects the stone surface, also affects the gas path and, as previously stated, ordinarily 10 to 25 percent of cross-sectional area is effective in allowing passage of a gas, which depends again on variations in size and shape, and on resistance of product to abrasion and crushing.

The difference between a 10 percent and a 20 percent gas path is very great as at 10 percent four times more draft would be necessary than for 20 percent.

It is this factor which gives us the greatest diversity in performance of different kilns. In some cases a capacity of one ton of lime per square foot of shaft area may be obtained with 1.5 in. of draft, while in another 5 in. may be necessary. Both of these are extreme cases, however, and should not discourage us from making an effort to bring some order out of chaos. In this attempt we never will reach the point of being able to definitely predict either surface for heat transfer, or gas path for gas flow of an untried stone. However, it should be possible to do so sufficiently close for practical purposes, especially after some measurements of size and a few laboratory calculations for the purpose of determining firmness in relation to some standard lime. After the stone has once been tried at one rate of operation in a lime kiln, it is possible to determine rather closely the operating factors for any other rate.

There are certain fundamental laws applying to flow of fluids which may be stated as follows. In respect to flow through beds of broken solids they, in the main, apply as presented, although specifically they are modified by such factors as: nature of flow, whether turbulent or straight line, nature of voids, shape of particles, packing factor, lifting factor, gas viscosity, gas composition, percentage of large and small constituent, transverse unconformity of the bed and flow interaction, relation of expansion spaces to flow channels.

1. In case of a straight line flow, when gas velocity is less than the

critical velocity of approximately one foot per second, friction varies directly as the mass flow of the gas. This state is not common in lime kilns except for those operating at very low capacity or in stagnated sections of any kiln.

2. In the case where velocity is more than the dividing critical velocity point, friction varies as the square of velocity if density remains constant; that is, friction of gases quadruples when mass flow doubles if resistance remains constant. This in turn means that if kiln capacity is to be doubled, draft will need to be increased four times.

3. Because at double capacity, gas weight is double and pressure loss quadruple, fan power necessary will be eight times that at normal capacity. Therefore, it may be said that power varies as the cube of mass flow of the gas.

4. When velocity is constant, friction varies as the density of the gas, that is directly as the mass flow.

5. When mass flow is constant but velocity varies due to change of density, induced by change of temperature, friction varies directly as the Absolute Temperature.

6. Friction of gases varies directly with surface of material, or inversely with size of material. If size of stone is reduced from say a mean of 5 in. to a mean of 2½ in., then resistance will be doubled for the same rate of flow. This is not stating it exactly right since it is not the size of material but rather the size of the opening which governs, but the latter cannot be determined and anyway they should be proportional to the particle size as long as their size and distribution remain the same.

(Continued on page 84)

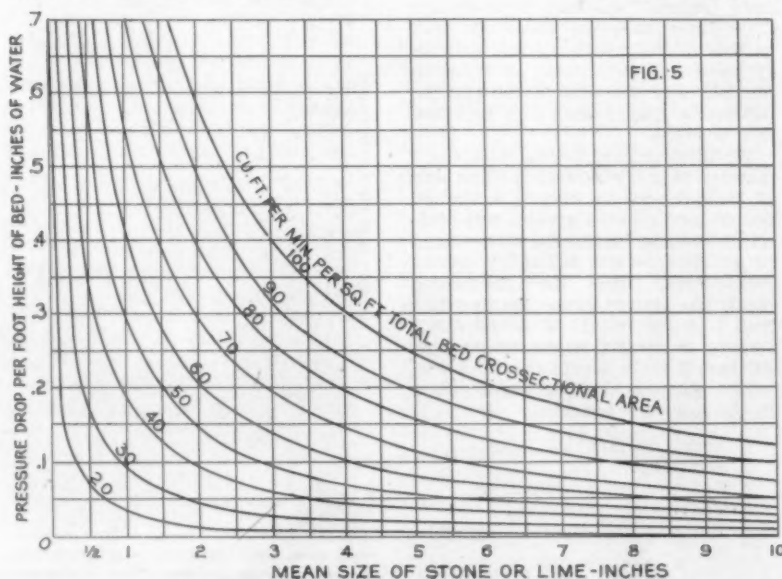


Fig. 5: Showing how gas friction varies with size of stone

J&L PERMASET

PRECISIONBILT PRE-FORMED WIRE ROPE



PRECISION AND PRE-FORMING

MEAN PERFORMANCE FOR YOU

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J&L PERMASET

PRECISIONBILT PRE-FORMED WIRE ROPE

(Continued from page 82)

Of the above, Rule 5 does not hold true in the case of lime kilns and neither does it seem to hold true in the case of blast furnaces. Although temperature and so also the density vary through a very wide range, pressure drop from level to level seems constant per foot of height. No doubt the many influencing factors first listed must be responsible for this. Whenever a diversion from a straight line drop was found it could be ascribed to either local looseness due to arching or denser packing of the bed which is characteristic when lime is easily crushed.

Fig. 5 was drawn on the basis that friction varies as the square of mass velocity according to Rule 2 and inversely with the size of material according to Rule 5. This, together with the friction factor, was determined on Beachville, Ontario, high capacity kilns.

These kilns, which are notable in their output and efficiency, operate with stone of approximately 5-in. size, and produce about 80 tons of lime per day with a draft drop of a little less than 5 in. As the active shaft height is 37.5 ft., draft drop per foot is .13 in. water gauge.

The volume of gases is obtained from Fig. 6 and in this case is just about 50 cu. ft. at 62 deg. F. per ton of lime per minute, and as the shaft area of the kiln is 55 sq. ft. the flow rate is 72.7 cu. ft. per sq. ft. of shaft cross-section per minute.

It is necessary to emphasize that when stone is varied in size, taking the mean size is not correct, because when it is a matter of heat transfer, it is the surface of the largest sizes that count, proportioned as if the entire space would be occupied.

When it is a matter of gas flow, as in this instance, it is the small sizes that govern because it is they which determine the size of the voids and therefore the cross-section of the clear gas path.

In one case one interferes with heat transfer, in the alternate it is the other which interferes with gas flow. One nullifies the advantage of the other and vice versa. To make it practically applicable, in one case we should consider as the proper size, the predominately small pieces, in the other the predominately large pieces, and ignore the occasional more extreme dimension.

The large stone, which are slow heating, destroy the value of high surface which the small stone possess. The small pieces offset the large gas path which the larger sizes would present.

The following "Fannings" formula embraces the various factors effecting pressure drop:

$$P = \frac{4FBLV^2}{2GD}$$

P = Pressure Drop as Lbs. per Sq. Ft.
 F = Friction Factor
 B = Density of the Gas, Lbs. per Cu. Ft.

L = Height of Bed in Feet
 V = Velocity of the Gas, Ft. per Sec. per Sq. Ft. of Bed

G = Acceleration Due to Gravity
 D = Diameter of Passage in Feet

In the above, friction factor F is very important and varies as

$$F = \frac{Z}{DVS}$$

DVS

Z = Viscosity of the Gas

D = Diameter of the Passage

V = Linear Velocity

S = Specific Gravity

Fig. 7 is a very useful chart. It consists of a grid of arbitrary curves plotted in accordance with draft loss law, upon which the draft drop of many operating kilns at their respective capacities is projected. If one point is located, draft required for any other capacity can be determined by just following the respective curve.

The preceding discussions give us the following relationships in friction, surface and height of column necessary for different size of stone:

entire range of sizes for any given rate of flow. Therefore, it now appears, for example, that if the active height of the Beachville kiln, cooler, calcining zone and preheater needs to be 54 ft., for 3 to 6-in. stone, for 1½ to 3-in. stone it would be only 27 ft., for ¾ to 1½-in. stone, only 13.5 ft. and at the capacity of 80 tons, draft would remain at the 5-in. drop all through these ranges. Surprising as this is, it is not correct, and later it will be developed that for other reasons, layer height necessarily drops off even faster with stone size reduction, but draft for any given capacity remains the same. Small rock kilns were creating unnecessarily excessive resistance to the flow of gases, mainly on account of too great bed heights, with draft requirements impractically high for ordinary fan systems. Of course there are also other reasons, such as small voids in a bed of small stone, which do not allow for much lateral gas flow and distribution. With small stone, gas needs to enter at many points of the bed cross-section to assure its uniform distribution and to avoid stratification.

It should enter at high velocity for deep penetration and in addition

TABLE 10

| Size of Stone..... | 3/16-3/8 | 3/8-1/2 | 1/2-3/4 | 3/4-1 | 1-1 1/2 | 1 1/2-2 |
|-------------------------------|----------|---------|---------|-------|---------|---------|
| Relative Friction | 4 | 2 | 1 | 1 | 1 | 1 |
| Relative Surface | 4 | 2 | 1 | 1 | 1 | 1 |
| Relative Layer Thickness..... | .25 | .5 | 1 | 1 | 1 | 1 |
| Comparative Height, Feet..... | 1 | 2 | 4 | 8 | 16 | 32 |
| Friction x Height..... | 1 | 1 | 1 | 1 | 1 | 1 |

It will be noticed that since surface doubles when size halves, necessary column height is reduced to half and although friction doubles with half-sized material, reduction in the height of the bed necessary, due to doubling of surface, brings friction back to unity and remains unity through the

there should be some secondary cause to create turbulence and later dissemination in the gas air stream.

Gas Volumes Necessary

Since gas friction varies directly as the density of the gas, we can reduce

(Continued on page 86)

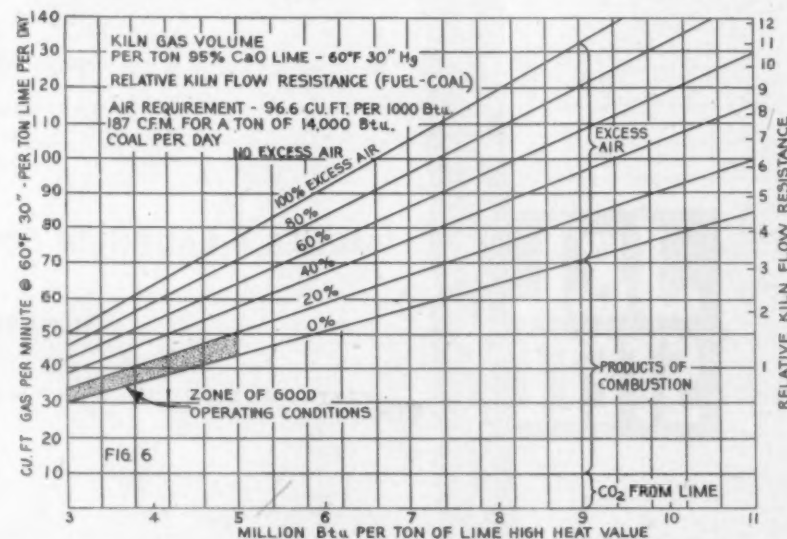


Fig. 6: Graph for determining volume of gas required for good operating condition

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FIRESTONE Off-the-Highway Tires cut operating costs because they keep right on rolling after other tires have taken the final count. Contractors have proven this on every kind of job everywhere.

They stand up under terrific punishment because of the materials and workmanship that Firestone puts into their construction. Bodies are made of the strongest rayon cord, Gum-Dipped for extra life. There are four extra plies to take impact blows. Sidewalls are double thick — an extra safeguard against rutwear and snags. The tread is strong, tough, cut-resistant.

These are the reasons why Firestone tires will cut your operating costs and increase your profits. They are built to do the job — and to stay on the job.

For the best in music, listen to the "Voice of Firestone" every Monday evening over NBC network.

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Firestone

OFF-THE-HIGHWAY
TIRES



Worthington-Ransome Blue Brute Distributors

By referring to the advertisement on page 87, you'll learn the meaning of the (1), (2) or (1-2) beside their names.

Ala., Birmingham (1) J. D. Pittman Tractor Co.
Ariz., Phoenix (2) Smith Booth Usher Co.
Ark., Fort Smith (2) R. A. Young & Son
Little Rock (1) Kern-Limerick, Inc.
Little Rock (2) R. A. Young & Son
Calif., Los Angeles (1) Garlinghouse Bros.
Los Angeles (2) Smith Booth Usher Co.
San Francisco (2) Coast Equipment Co.
Colo., Denver (2) John N. Meade
Denver (1-2) Power Equipment Co.
Conn., Hartford (2) The Holmes-Talcott Co.
New Haven (1) W. I. Clark
Waterbury (1) Contractors Supply Co.
Del., Smyrna (1) King-Burrows
D. C., Washington (1) M. A. Doetsch Machinery Co.
Fla., Jacksonville (1) Julia P. Benjamin, Inc.
Tampa (2) S. M. Rupp
Ga., Atlanta (2) Tractor & Machinery Co.
Savannah (1) Morgans, Inc.
Ida., Boise (1-2) Olson Manufacturing Co.
Ill., Chicago (1-2) Chicago Construction Equipment Co.
Chicago (1) Thomas Hoist Co.
Ind., Fort Wayne (1) American Steel Supply Co.
Indianapolis (2) Reid-Holcomb Co.
Iowa, Des Moines (2) Electric Eng. & Const. Co.
Ky., Harlan (2) Hall Equipment Sales Co.
Louisville (1) C. Coleman
Louisville (2) Williams Tractor Co.
Paducah (1) Henry A. Potter Supply Co.
La., New Orleans (1) Ole K. Olson Co.
New Orleans (2) W. N. F. Sarg Equipment Co.
Maine, Portland (1-2) Maine Truck-Tractor Co.
Md., Baltimore (1) Stuart M. Christhill & Co.
Baltimore (2) D. C. Elphinstone, Inc.
Mass., Boston, Allston (1-2) Clark-Wilcox Co.
Cambridge (2) W. W. Field & Son, Inc.
Mich., Detroit (1) T. G. Abrams
Detroit (2) W. H. Anderson Co., Inc.
Flint (2) Grandson-Hall & Co.
Muskegon (1-2) Lakeshore Machinery & Supply Co.
Minn., Minneapolis (1-2) Philippi-Murphy Equip. Co.
St. Paul (2) D. L. O'Brien
Minn., Jackson (1) Jackson Road Equipment Co.
Mo., Clayton (1-2) The Howard Corporation
Kansas City (1) Brown-Strauss Corp.
Kansas City (2) Machinery & Supplies Co.
St. Louis (2) W. H. Reeves
Neb., Lincoln (1) Highway Equipment & Supply Co.
N. J., Hillside (2) P. A. Drobach
Newark (1) Johnson & Dealman
North Bergen (2) American Air Compressor Corp.
N. M., Albuquerque (2) Bud Fisher Co.
Albuquerque (1) Morrow & Co.
Roswell (2) Smith Machinery Co.
N. Y., Albany (1-2) Milton-Hale Machinery Co.
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New York (1-2) Railroad Materials Corporation
Olean (2) Freeborn Equipment Co.
N. C., Raleigh (2) Carolina Tractor & Equipment Co.
N. D., Fargo (1-2) Smith Commercial Body Works, Inc.
O., Cincinnati (2) Finz-Equipment Co.
Cleveland (2) S. M. Clancy
Cleveland (1) H. B. Fuller Equipment Co.
Cleveland (2) Gibson-Stewart Co.
Marietta (2) Northwest Supply & Equipment Co.
Toledo (1) Edmund Supply Co.
Toledo (2) M. W. Kilcorse & Co.
Okla., Oklahoma City (2) Townsco Equipment Co.
Oregon, Portland (2) Andrews Equipment Service
Pa., Allentown (2) H. N. Crowder, Jr., Inc.
Easton (2) Sears & Bowers
Harrisburg (2) N. A. Coulter
Oil City (2) Freeborn Equipment Co.
Philadelphia (1) Giles & Ransome
Philadelphia (2) Metalweld, Inc.
Pittsburgh (2) Atlas Equipment Corp.
Wilkes-Barre (2) Ensminger & Co.
Wilkesburg (1) Arrow Supply Co.
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S. C., Columbia (2) Smith Equipment Co.
Tenn., Knoxville (2) Wilson-Weemer-Wilkinson
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Tex., Dallas (1) Service Equipment Co.
Dallas (2) Shaw Equipment Co.
El Paso (2) Equipment Supply Co.
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Houston (2) Dye Welding Supply Co.
Houston (1) McCall Tractor & Equipment Co.
San Antonio (2) Patten Machinery Co.
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Utah, Salt Lake City (1-2) Landes Engineering Co.
Vt., Barre (1-2) A. M. Flanders, Inc.
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Wash., Seattle (1) Columbia Equipment Co.
Seattle (2) Star Machinery Co.
Spokane (2) Andrews Equipment Service
Spokane (1) Columbia Equipment Service
W. Va., Charleston (1) West Virginia Co.
Fairmont (2) Interstate Engineers & Constr., Inc.
Wis., Milwaukee (1) Mekeel Engineering Co.
Wyoming, Cheyenne (2) Wilson Equipment & Supply Co.

Blue Brute

Worthington Pump and Machinery Corp.

Worthington-Ransome Construction
Equipment Division
Holyoke, Massachusetts

Lime Manufacture

(Continued from page 84)

all gas volumes to standard temperatures of 60 deg. F. Although in volume velocity, this gas will change with variation in temperature in its flow through the kiln, its weight; that is, mass velocity, will remain the same. This greatly simplifies the subject for us. To determine cold gas volume fairly closely, is readily possible from estimated heat values of coal and lime—fuel ratio, expressing it in millions of B.t.u. per ton of lime. For greater accuracy it can be determined by gas analysis and the use of Fig. 4, designed for all fuels, from coke to natural gas, and giving not only the amount of heat in millions of B.t.u.'s but percent of air the dry kiln exhaust gases contain.

With this information we can refer to Fig. 6, from which the gas volume per ton of lime per minute is obtained. On this chart the cross-hatched area is the zone of best kiln operation and most good kilns will fall into the vicinity but not over 50 cu. ft. per ton per minute.

The CO₂ from the limestone and the volume of the products of combustion are definite for any given amount of heat generated. The excess air, however, is variable and can be determined only by gas analysis with calculations, although on good kilns we can at times just assume that they operate with 20 percent excess, as they would otherwise not be good kilns. By excess air is meant air uncombined coming up through the kiln and not air induced through leaky top and stone charging door.

It is well worth some time studying this chart. On the right side is given the scale of relative kiln flow resistance with variable volumes per ton of lime. Forty cubic feet is considered standard, lime kilns seldom being any better. As the draft loss increases as

the square of mass velocity, at 80 cu. ft. it would be four times that of 40, and 80 is quite readily possible when fuel ratio is poor and the volume of products of combustion is increased with high volume of excess air.

If such a kiln is of natural draft type, its capacity would be low indeed. If of forced-draft type, it also would be low, except fan and motor were considerably oversize.

But even if the volume is not 80, if just 60 cu. ft. per ton per minute, which it is likely to be, even on good kilns, resistance is twice that which it should be and kiln capacity will drop decidedly.

If we apply the comparison factors of Table 10, we can readily reason what a kiln should be for any other capacity rate or for any other stone size. However, the picture is far from complete; we still need to delve into the subjects of heat transfer to the stone and lime, also the matter of heat flow through them. For this we need to know first the heat requirements for preheating, for calcination and for cooling of lime.

Billions for Construction

F. W. DODGE CORPORATION, New York, recently reported through President Thomas S. Holden that up to the first of June his organization had spotted 99,638 specific construction projects contemplated for post-war execution in the 37 states east of the Rocky Mountains. The combined value of all projects is \$15,746,202,000. Mr. Holden emphasized that the listings included specific projects only, and do not include announcements of general construction or expansion programs. Of this total, 33,104 jobs, estimated to cost \$7,753,138,000, have progressed to the design stage. The remaining 66,534 projects, with an estimated cost of \$7,993,064,000, constitute a backlog of specific contemplated projects, many of which will progress to the design stage as rapidly as architects and engineers can find enough draftsmen to expand their currently limited planning activity.

"The dollar volume of design-stage work, exclusive of the backlog of additional contemplated projects, is 143 percent greater than the 37-state contract volume for 1938, is 118 percent greater than the 1939 contract volume, 93 percent greater than the 1940 volume, and 14 percent greater than the maximum peacetime contract volume established in 1928," Mr. Holden said.

More Paper Bags

IT IS ANTICIPATED that the paper bag situation may ease somewhat with smaller demands from the War agencies with the end of the Japanese war. The supply of asphalt laminated paper for shipping sacks is currently tight, but cutbacks on military production and additional production may help supply the demand.

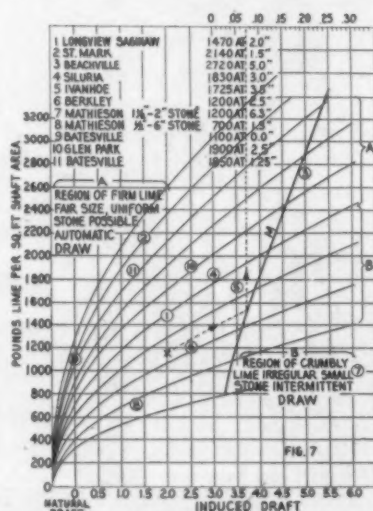


Fig. 7. Curves illustrating draft conditions for maximum efficiency and production of good quality lime

BETTER CONCRETE IN BIG BATCHES AT LOWER COST



KNOW YOUR

BLUE BRUTES

Your Blue Brute Distributor will gladly show you how Worthington-Ransome Blue Brute construction equipment will put your planning on a profitable basis and prove that *there's more worth in Worthington*. Act now! His name is listed on page 86. The number beside his name indicates the Blue Brutes he carries.

1.

Blue Brutes include: Pavers, Concrete Spreaders**, Concrete Mixers, Concrete Placing Equipment, Big Mixers, Finishing Machines**, Pneumatic Placing & Grouting Equipment, Truck Mixers, Plaster & Bituminous Mixers, and related equipment.

2.

Blue Brutes also include: Diesel, gasoline and electric driven Portable Compressors from 60 to 500 cu. ft. capacity in mountings to suit all jobs; Rock Drills and Air Tools in a wide range of weights and sizes; Contractors' Pumps.**

**Proposed Products

If you have your sights set on some of those big construction jobs that loom over the horizon, you'll want to investigate Ransome Blue Brute "Big" Mixers.

Look at their record: Ransome built the first "big" mixer back in 1902 for the U.S. Navy Dept. . . . has pioneered all major improvements ever since. Used for some of the world's outstanding construction projects they are first choice too; for central mix operators. A Blue Brute 126-S Mixer owned by Arundel-Brooks Corp. of Baltimore has mixed more than 2,000,000 yards and is still going strong.

Look at their features: Ransome's exclusive mixing action . . . fast, thorough . . . result of 96 years' mixing experience; spiral cut-off water tank and non-by-passing poppet valves . . . for the accurate water measuring that central mixing plants demand; hydraulically-operated discharge chute . . . simple, compact, trouble-free; car-wheel metal drum rollers and true-circle machined-tracks . . . for maintained accurate alignment of drum with driving mechanism.

Check these and the many other features that make Blue Brute "Big" Mixers your best bet for making better concrete at lower cost.

BUY BLUE BRUTES

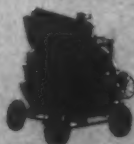
RE. 12



Truck Mixers

Capacities:

2, 3, 4½, 5½ cu. yds.



Portable Mixers

Capacities:

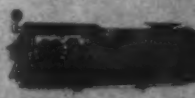
3½, 7, 10, 14 cu. ft.



Big Stationary Mixers

Capacities:

23, 56, 84, 126 cu. ft.



Pneumatic Placer

Capacity:

7, 14, 28 cu. ft.

WORTHINGTON



Worthington Pump and Machinery Corporation, Worthington-Ransome Construction Equipment Division, Holyoke, Mass.

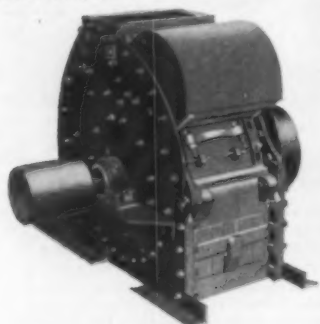
NEW HOLLAND

ADVANCEMENTS



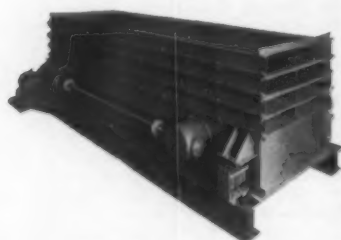
DOUBLE IMPELLER MODEL 3030 CRUSHER

Here is a primary and secondary crusher combined into one unit. Reduces run-of-the-quarry stone as large as 36" to an optional minimum of 80% minus 1" in one operation. Will produce from 100 to 150 tons per hour with as little as 100 hp. Lends itself admirably to portable as well as stationary units.



RUGGED INDUSTRIAL-TYPE LIMESTONE PULVERIZERS

Set up to produce agricultural limestone in large capacity economically. Install a N.H. No. 30 Impact Type Pulverizer after the Model 3030 Double Impeller Crusher.



N. H. HORIZONTAL VIBRATING SCREENS Have Superior Features. Designed for the Most Difficult Screening Jobs.

LET N.H. ENGINEERS PLAN YOUR SET UP FOR PRODUCING AGRICULTURAL LIMESTONE OR CRUSHED AGGREGATES. THE MOST ECONOMICAL WAY IS WITH THE MODEL 3030 AND OTHER N. H. EQUIPMENT.

Address RF-4

NEW HOLLAND MACHINE CO.

New Holland, Pennsylvania

Agstone Meeting

(Continued from page 80)

be obvious from this analysis that while an excellent start has been made in recruiting membership (representing at present something less than 50 percent of reported production), there is much hard work yet to be accomplished, and it would therefore seem highly desirable to initiate as promptly as possible a nation-wide intensive membership campaign."

The board voted to hold an annual meeting of the Division, the last week in January, 1946, in Cincinnati, coincident with the annual meeting of the National Crushed Stone Association, if transportation conditions permit, which is not considered likely. Otherwise, the board of directors will meet in New York City, at about the same time the N.C.S.A. board is scheduled to meet.

Registration

The following members of the board of directors of the Agricultural Limestone Division were present, and in addition numerous guests from the board of directors of the National Crushed Stone Association:

E. E. Haapala, acting chairman.
Earl L. Dingle, Towson, Md.
James Eells, Cleveland, Ohio.
Otho M. Graves, Easton, Penn.
P. E. Heim, Youngstown, Ohio.
L. W. Hayes, Kansas City, Mo.
R. P. Immel, Knoxville, Tenn.
A. W. McThenia, Fort Spring, W. Va.

Verne C. Morgan, Louisville, Ky.
S. P. Moore, Cedar Rapids, Ia.
Paul M. Nauman, Dubuque, Ia.
Robert Neuheisel, Eau Claire, Wis.
A. B. Rodes, Nashville, Tenn.
C. M. Sims, Gaffney, S. C.
O. M. Stull, Buchanan, Va.
R. T. Willingham, Atlanta, Ga.

E. J. Krause, a member of the board and of its executive committee, was unable to be present, but was represented by his son, Charles.

OPA Price Ceilings

(Continued from page 79)

shortage areas other than Class I, regional offices will have jurisdiction. The extent to which this jurisdiction will be exercised remains to be seen. It would seem, however, that some improvement in the manpower situation should take place shortly with regard to crushed stone producers because it is believed that in general our operations will to an increasing extent lie in other than Class I areas."

Mr. Boyd suggested to the board of directors that he be instructed to send a letter to O.P.A. Administrator Bowles asking that price ceilings on crushed stone be removed as no longer essential; competition with much surplus capacity would take care of prices. This suggestion was subsequently voted on and lost by a narrow margin. Mr. Boyd also urged

all present to work for passage of the Gwynne bill (H.R. 2788) which would provide a federal statute of limitation of one year, in which to bring suit for violation of the Wage-Hour law or any other of the various rules and regulations under which business men are attempting to do business.

Meeting Dates

It was voted to hold the annual convention of the Association in Cincinnati the last week in January 1946,



A new and hard-working director, E. E. Haapala, who also served as chairman of the Agricultural Limestone Division directors' meeting

if it is possible to hold conventions at that time; otherwise, it was voted to have the January meeting of the board of directors held in New York City. President FRED O. EARNSHAW, who presided throughout the meeting, was authorized to appoint a committee of five to consider ways and means of increasing membership.

Registration

F. O. Earnshaw, chairman, Youngstown, Ohio.

W. M. Andrews, New Castle, Penn.
G. A. Austin, Decatur, Ga.
L. J. Boxley, Roanoke, Va.
E. Eikel, New Braunsfels, Tex.
O. M. Graves, Easton, Penn.
E. E. Haapala, Zumbrota, Minn.
R. P. Immel, Knoxville, Tenn.
M. E. McLean, East St. Louis, Ill.
P. M. Nauman, Dubuque, Ia.
H. E. Rainer, Buffalo, N. Y.
Russell Rarey, Columbus, Ohio.
H. E. Rodes, Nashville, Tenn.
James Savage, Buffalo, N. Y.
F. W. Schmidt, Jr., Morristown, N. J.

O. M. Stull, Buchanan, Va.
D. L. Williams, Ripplemead, Va.
A. L. Worthen, New Haven, Conn.
Milo A. Nice, representing the Manufacturers' Division, Wilmington, Del.

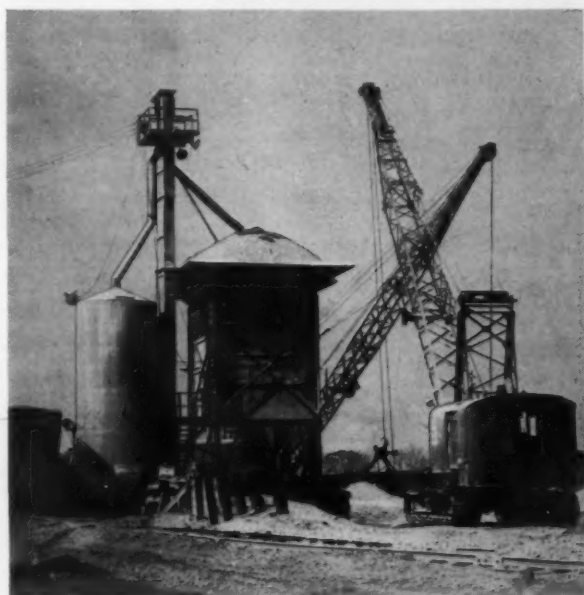
There were a number of guests including A. W. McThenia, Fort Spring, W. Va., representing Past-President

(Continued on page 90)

How to Plan

A READY-MIX CONCRETE PLANT

✓ *That Will Show Top Profits . . .*
 ✓ *Meet all Batching Specifications*



120 Yd. Step by Step Bin Central Cement Tank with Outside Auxiliary Cement Storage Crane Charged in a Temporary Set-Up.



Twin-Silo Roadbuilders All Welded Bulk Cement Batching Plant. High Capacity—Quickly Erected.

Johnson knows the ins and outs of concrete mixing—in large quantities or small. They will gladly show you how to design and build a plant that will produce the greatest profits at the least investment—one with capacity fitted to your market, and a layout designed to take full advantage of your property size and requiring less operating personnel.

You will profit, too, in your ability to meet the strictest federal, state or commercial specifications, for you can rely on Johnson accuracy in

precision batching. This ability to meet the ever-growing demand for *accurately*-batched concrete gives you a big advantage over less modern plants.

Without obligation, Johnson engineers will carefully analyze the requirements of your location, offer specific recommendations and draw up a proposed plant layout that delivers scientifically batched material as you need it.

Be ready to meet the pent up construction demand in your community. Write or wire today.



The C. S. JOHNSON Co.

Champaign, Illinois

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- Forging a Career
- Organized Knowledge
- Highway of Achievement
- Making Decisions
- Failure and Success

Noted Contributors

Among the prominent men who have contributed to the Institute's training plan, which is described in "Forging Ahead in Business," are: Thomas J. Watson, President, International Business Machines Corp.; Clifton Slusser, Vice President, Goodyear Tire & Rubber Co.; Frederick W. Pickard, Vice President and Director, E. I. du Pont de Nemours & Co.

Simply return the coupon below, and your FREE copy of "Forging Ahead in Business" will be mailed to you.

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Position.....

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(Continued from page 88)

J. A. Rigg, who was unable to attend; Charles Krause, St. Louis, Mo., representing his father, Past-President E. J. Krause, who was unable to come; S. A. Phillips, Pit and Quarry,

Machinery for Plant Improvements

(Continued from page 77)

livery of critical component parts within the next 60 to 90 days, which will enable the producer to be ready for the enormous demand for aggregates that is to come in postwar just ahead. Our slogan is 'up and atom'."—Iowa Manufacturing Co., Kenneth Lindsay.

"All ready reconverted to peacetime production. Full crew on full time rushing manufacture of crushers, new dual action crusher, hammermills, screens, conveyors, bins, portable plants, etc. Endeavoring to get atop large volume of orders. Delivery dates on new orders now 60 to 90 days but trying to shorten fast as possible although new orders being received daily. Glad to quote and offer best possible delivery, however, on any equipment needed in cement, limestone or pit and quarry field."—Diamond Iron Works, Inc., D. D. Knowles.

Crushing and Screening Equipment, Pulverizers

"To help you in gathering the information, we have no conversion problem. Our production as sold before the war fitted into its place during the war and will be continued in the same form in the postwar era. We have been privileged to build other equipment besides vibrating screens—equipment that was in no way related to the aggregates industry but rather designed primarily for the speeding up of certain parts of the work in airplane plants. We have been for some time, and still are, operating under a heavy burden of orders. We are at present operating on approximately a seven to eight week shipping schedule, and at this time of writing can see no particular letup in our delivery schedule."—Screen Equipment Co., Inc., C. S. Fielding.

"As our production for the war effort was largely for our regular line of woven wire screens and screening equipment, we have no problem of physical reconversion. We would earnestly suggest to the cement and rock products industries that they anticipate their equipment requirements as far ahead as possible so that the manufacturer can work out an orderly schedule which will enable the producer to obtain deliveries when needed."—The W. S. Tyler Co., Albert E. Reed, vice-president.

"Our company maintained a full schedule during the war, building our regular line of equipment for war service. Consequently we have no reconversion slack period and can con-

Chicago, Ill., and Nathan C. Rockwood, Rock Products, Chicago, and some of the directors of the Agricultural Limestone Division, who attended the meeting on July 27, reported elsewhere in this issue.

tinue to deliver Simplicity gyrating screens to the aggregates industries. Unrestricted flow of material and more manpower will help us improve our delivery somewhat since we still have a heavy backlog of unfilled orders."—Simplicity Engineering Co.

"We can answer your question very simply for we are one of the fortunate companies who never changed its product during the war. We have no reconversion problems and are in shape at the present time to proceed with the manufacturing of our equipment for the rock products industry. We have a good inventory of parts and expect to be able to maintain our pre-war deliveries of three to four weeks from receipt of order."—Productive Equipment Corp., L. H. Lehman, sales manager.

"Our company has no reconversion problem as our demand during war period has been entirely for standard equipment for cement, lime, gypsum and other rock products industries in addition to extensive coal preparation machinery. We are accordingly in position to undertake the manufacture of equipment for the rock products industries, including primary single roll crushers, secondary reversible hammermills, impactors, single roll crushers, fine reduction reversible hammermills for the manufacture of agricultural limestone and coal crushers."—Pennsylvania Crusher Co., W. A. Battey.

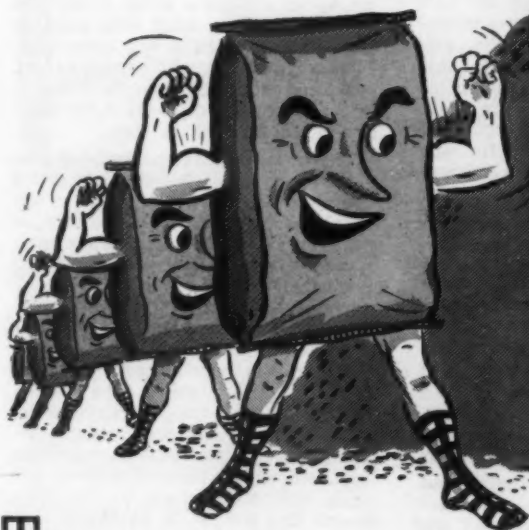
"Reconversion not a problem with our company. We are in a position to immediately fill orders for American ring crushers and American hammermills required for the reduction of materials used in the cement industry, also other divisions of rock products industry and concrete products industry."—American Pulverizer Co., Henry Griesedieck, general manager.

"Our company is prepared immediately to build machinery for cement and other divisions of rock products and concrete products industry. Products manufactured by us during war were similar in type to those required in peace. Will require practically no time to reconvert."—Williams Patent Crusher & Pulverizer Co.

"We are entirely reconverted and are in an excellent position to furnish machinery for the portland cement industry and have been very busy for the last year filling orders for the agricultural limestone industry. Our new line of Bradley Hercules mills is now in full production. Now that competent workmen are available we are in a position to take on

(Continued on page 92)

How can 16 POUNDS of MULTIWALLS



**CARRY A TON
OR MORE
OF MATERIALS?**

The average 100-lb.-capacity Multiwall Paper Bag is only 8/10 of a pound in weight. Only 16 lbs. of Multiwall bags, therefore, are required to carry and protect a full ton of material.

These figures hold an important story of Multiwall packaging efficiency and economy. They also indicate the strength and toughness of the paper of these bags. This paper is made according to exacting specifications and must pass exhaustive tests concerning strength, flexibility, and moisture resistance.

Multiwall design is another reason for Multiwall stamina and efficiency. Bags are constructed of several plies made in tube form so that each bears its share of the burden.

ADDITIONAL MULTIWALL ECONOMIES

Multiwall Paper Bags are tight and sift-proof. They help keep storerooms tidy. And, because materials do not

readily cling to their smooth interior walls, they empty quickly and cleanly . . . cut retention losses to a minimum.

St. Regis bag filling machines and methods offer still another worthwhile economy. Results have shown that these machines definitely speed filling operations, reduce labor and equipment costs, and release manpower for other jobs.

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A NEW, MONUMENTAL SERIES ON THE ROCK PRODUCTS INDUSTRIES IN THE UNITED STATES

In the October Issue of ROCK PRODUCTS will appear the first of a series of articles that has long been needed by all producers and manufacturers.

The work has been undertaken at present to give the complete picture of:

- PRODUCTION TRENDS
- MATERIAL RESOURCES
- METHODS OF OPERATION
- SPECIFICATION REQUIREMENTS

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With the amount of production ahead for the Rock Products Industries, you don't want to miss a single one of the articles in this new series.

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today.

ROCK PRODUCTS

309 WEST JACKSON BLVD.
CHICAGO 6, ILLINOIS

Machinery Available

(Continued from page 90)

any size order for pulverizers and are in a position to make delivery as in pre-war times."—Bradley Pulverizer Co., William A. Gibson.

"Have no reconversion problems and can start immediately manufacturing Marcy ball and rod mills, Massco-Fahrenwald flotation machines and accessory equipment used in the cement and rock products industry. We have supplied this equipment throughout the war to the mining industry so it could meet the unusual Government demand for new metal tonnage required in the manufacture of ammunition, tanks, airplanes, trucks and other critical war equipment and material. When skilled labor and foundry workers are again available we can materially increase our manufacturing volume for any assistance required by the cement and rock products industries."—The Mine and Smelter Supply Co., C. O. Willard.

"This company is now ready to supply new equipment to the cement industry and other divisions of rock products industry."—Babcock & Wilcox Co., C. M. Neighbors.

"Deliveries of industrial equipment can be made within three or four weeks of receipt of orders. New crushing equipment is available for the market."—New Holland Machine Co.

"I am glad to say that throughout the war period we have manufactured our regular products, as the majority of our output went into the war industry, so we have no reconversion problem and are in a position to fill orders for pulverizers and air separating equipment in the normal way, and in reasonable delivery time."—Raymond Pulverizer Division, Combustion Engineering Co., Inc., W. A. Koren.

Engines—Pumps

"We are completely reconverted and our entire output of tractors, road machinery and Diesel engines is being applied to fill orders from normal civilian markets."—Caterpillar Tractor Co., G. E. Spain, Vice-President.

"Practically the entire production facilities of The Buda Co. have been devoted to manufacturing, assembling, and processing engines, generator sets, railway equipment and jacks for the armed forces throughout the duration of the war, but, as all of these units have a definite place in the building and rebuilding of the postwar world, we at Buda have no reconversion problem and are ready now, with the additional knowledge and facilities developed through the pressure of a war-stimulated program, to employ our full production facilities for supplying equipment to the stone, sand, gravel, cement and allied material industries."—The Buda Co., R. K. Mangan, executive vice-president.

"We do not have any particular reconversion problem in our factory as we sold our standard engines with only minor changes for war purposes. We are in a position to take orders for our Diesel engines and offer reasonable deliveries provided we can get enough material from our sources of supply. We are glad to cooperate and do whatever we can to help the industry obtain the equipment it may desire."—Murphy Diesel Co., H. W. Schnetzky, president.

"We have been producing our standard slurry pumps for cement and kindred plants, also for other industries without a letup during the war period, since they were used in most of the essential war industries. The war's ending will permit use of restricted materials which will insure better performance."—A. R. Wilfley and Sons, Inc., W. E. Geer.

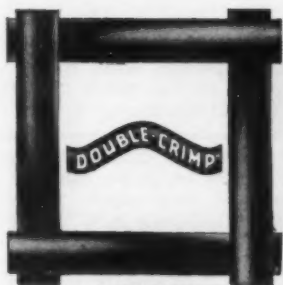
"With war shackles removed and industry given the 'Go' sign the Cummins Engine Co. faces no problems in reconversion. Our ability to swing at once into full postwar production with new and improved models as well as our standard pre-war models places us in a position at once to supply Diesel engines ranging in horsepower from 100 to 550. With tremendous amount of construction now planned, the future looks bright in the industrial field for all types of equipment calling for prime movers. We feel the construction field will be one of first to get going full blast ahead."—Cummins Engine Co., Inc., P. E. Letsinger.

"We find ourselves in excellent condition to take care of our normal trade, as we have had no particular reconversion problems. While we of course manufactured many items to further the war effort, most of the products manufactured were those we normally manufacture in peacetime. We have no outside contracts, so as a result we can continue as we have in the past, converting the flow of equipment to civilian purchasers."—Fairbanks, Morse & Co., O. O. Lewis, assistant general sales manager.

"Reconversion has been no problem for the Superior Engine Division. Orders are now being accepted for Superior Diesel engines and generator sets both standard and supercharged in all sizes from 30 to 1125 hp. and kilowatt ratings from 20 to 930. Delivery dates are approximately normal as a result of intensive research carried on continuously during the war years and lessons learned in producing thousands of engines for the armed services. The postwar Superior sets a still higher performance standard as a power source for all branches of the rock products industry."—The National Supply Co., R. E. Bowland, sales department.

"We were tooled for building pumps exclusively before the war and confined ourselves solely to building of

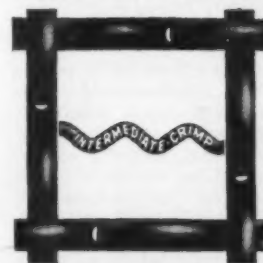
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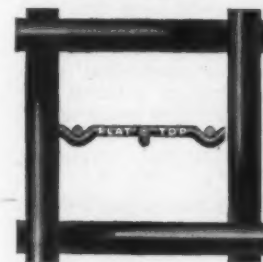
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Arch-Crimp



Intermediate-Crimp



Flat-Top

"The Perfect"

Wire Cloths and Screens

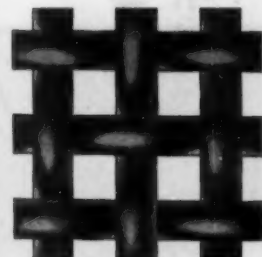
We have been specialists for many years in the making of precision wire cloths, wire screens and woven wire products.

We apply our same precision principles in fabricating wire cloths into finished industrial units, for production or processing equipments or for permanent parts of countless industrial products.

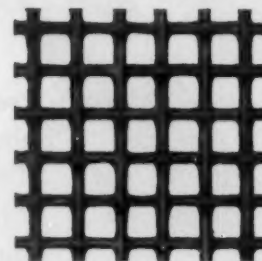
We invite your inquiries for wire cloths of all commercial metals or alloys or weaves, in continuous lengths or cut to size, or processed to meet your individual requirements.

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| Super-Loy | Arch-Crimp | Bending | Baskets |
| Steel | Coiled | Binding | Circles |
| Galvanized | Double-Crimp | Brazing | Cones |
| Tinned | Double-Fill | Calendering | Crates |
| Stainless Steel | Dutch | Clinching | Cylinders |
| Nickel-Chromium Alloys | Filter | Cutting | Discs |
| Aluminum | Flat-Top | Dipping | Forms |
| Brass | Herringbone-Twill | Dishing | Leaves |
| Bronze | Intermediate-Crimp | Flanging | Lengths |
| Commercial Phosphor | Rek-Tang | Forming | Panels |
| Copper | Salvage-Edge | Framing | Pieces |
| Monel Metal | Straight-Warp | Galvanizing | Racks |
| Nickel | Stranded | Painting | Ribbons |
| Any special alloys available in rod or wire form | Sta-Tru | Shearing | Rolls |
| | Triple-Warp | Sitting | Sections |
| | Twill | Trimming | Segments |
| | Twisted-Fill | Arc-Welding | Spacers |
| | Twisted-Warp | Gas-Welding | Strips |
| | | Spot-Welding | Template shapes |
| | | | Trays |

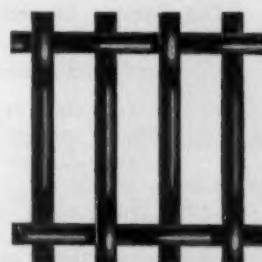
We will follow your specifications and blue-prints exactly as your production engineers have prepared them—or we will submit suggestions for your approval.



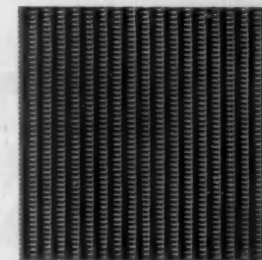
Double-Crimp



Galvanized



Rek-Tang

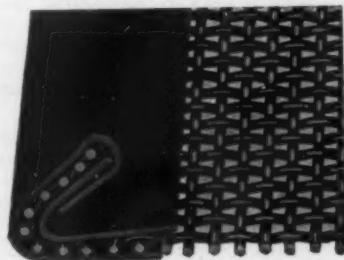


Dutch Weave

The LUDLOW-SAYLOR WIRE COMPANY

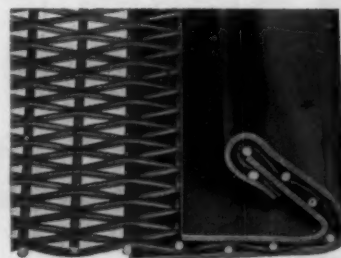
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LUDLOW-SAYLOR PRECISION FABRICATING makes vibrating-screen decks and jackets that are easily handled—quickly installed—need fewer adjustments and renewals.

Illustrations suggest only a few of the many available types of wire cloth and woven wire screens, which may be custom-finished with attachments to fit your particular processing installations.





The Service Record of this wire rope continues to make and hold friends.

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A. LESCHEN & SONS ROPE CO.
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Any Size—Any Shape
Any Metal
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Harrington & King
PERFORATING CO.

5850 FILLMORE ST., CHICAGO 44, ILLINOIS
114 LIBERTY ST., NEW YORK 6, N. Y.

Machinery Available

(Continued from page 92)

pumps during the war so that reconversion is no problem. We are now producing pumps for the cement industry also building pumps for the sand and gravel and coal industries. Installed considerable number of new machines in our shops to speed production during the war which are now well suited for peacetime use. At present in position to make almost immediate deliveries in some lines of pumps. Expect situation to improve still further within next two months."—Morris Machine Works, P. Farrer.

Steel and Wire Products

"Our plant is ready now to take orders and produce steel plate and sheet metal products. Our inventory of materials is large and we have no manpower shortage. We also have increased our equipment during war period, increasing our productive capacity."—Alpha Tank & Sheet Metal Manufacturing Co., A. Allina, president.

"We have no reconversion problem. We are building in our shops at the present time tanks and steel plate work similar to the installations we fabricated before December 7, 1941. At the present time, we are in a position to fabricate any field-erected steel tanks, bins and other heavy plate work and to ship them in about as short a time as any in our history."—Chicago Bridge & Iron Co., Milo E. Smith.

"Reconversion with us is no problem. We are prepared to handle post-war business with reasonable promptness."—John A. Roebbling's Sons Co., J. R. Berger.

Rubber Products

"As far as heavy duty tires, belting and hose for rock products, cement and similar industries, are concerned, we have no reconversion problem. The company has been producing this type of tire for military purposes and is now diverting tires to civilian industrial channels. Belting and hose production continued throughout the war and the company expects to speed up its deliveries."—Goodyear Tire & Rubber Co., Harold A. Polonus, public relations department.

"The rubber industry has no reconversion problem in supplying portland cement and rock products industry. It has been furnishing belting, hose and other products continuously during the war period. Will continue to do so to best of its ability."—B. F. Goodrich Co., R. E. Powers.

Ready-Mixed Concrete and Concrete Products Equipment —Bins, Batchers

"No reconversion required here at our plant and we are already in production on equipment for civilian contractors."—Mixermobile Co., Inc.

"Plant already at work full time on production of postwar line of concrete mixers, pavers, truck mixers, big mixers for central mixed plants, etc."—Ransome Machinery Co., W. F. Lockhardt.

"As result of Army cancellation of clamshell bucket order we can now ship clamshells from stock, road-builders' batching plants in two weeks and ready mixed concrete plants in three months. No reconversion problem. Our shop load merely relieved and within three to four months will have most standard clamshell and batcher items in stock for immediate delivery needs."—The C. S. Johnson Co., J. H. Heintz.

"We have anticipated reconversion for several months and have rapidly increased production for domestic requirements. Reconversion is no problem whatsoever. Our only problem is material in ample quantities for balanced inventory. When available we will produce to the limit of our facilities. Our plant and equipment require no reconversion for domestic manufacture."—Jaeger Machine Co., R. McLean.

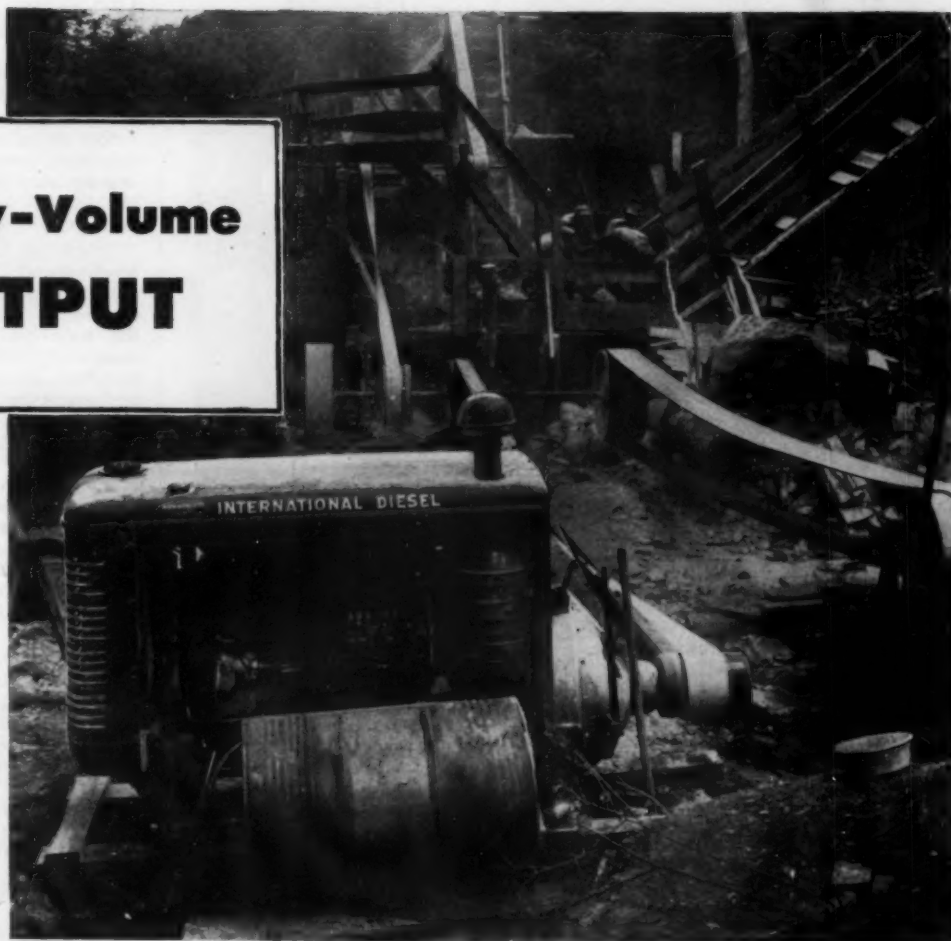
"We are fully reconverted to peacetime production. Shipments of transport truck mixers, block machines, elevators and hoppers are being made as fast as produced. Delivery schedules are based on our ability to secure necessary material. Certain items are still critical and will delay our production seriously unless cutbacks release sufficient material to allow us to fill orders on file. Production for domestic use should have first consideration so as to provide employment for those released from armed services and war production. Cancelling of production controls and availability of men and material will help in speeding return to normal production."—Concrete Transport Mixer Co.

"This company has no reconversion problem for production of equipment for various divisions of the rock products industry and for the concrete products industry. All through the war period Blaw-Knox equipment has been supplied to all classes of purchasers subject to Government limitations. Present problem is immediate procurement of supplies of steel, gas engines, electric motors, clutches, transmissions, bearings, sprockets, castings, etc., to take care of both current and future orders. Indications now point toward quicker and more plentiful deliveries from suppliers. Blaw-Knox equipment production is going ahead and will be stepped up when more materials are available."—Blaw-Knox Division, Blaw-Knox Co., Arthur A. Levison, manager, construction equipment.

"We have no reconversion problem but are in regular production on equipment for manufacturing concrete sewer and culvert pipe. Deliveries are slowly improving and will gradually return to normal as short-

(Continued on page 96)

Steady-Volume OUTPUT



... and the Power is INTERNATIONAL

CRUSHING PLANTS powered by International Diesels are satisfactorily equipped for steady-volume output at low cost.

The International UD-18, 100 h.p. Power Unit at work on this job is typical. *Full Diesel engine—low consumption of low-cost fuel—International's quick, easy starting feature—bulldog hang-on when the load gets heavy—low maintenance.* Take these together and they

account, in part, for the preference shown Internationals and the excellent reputation they enjoy everywhere.

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POWER UNITS



WHEELED TRACTORS

INTERNATIONAL

Power for Victory



Industrial Power

Power for Peace



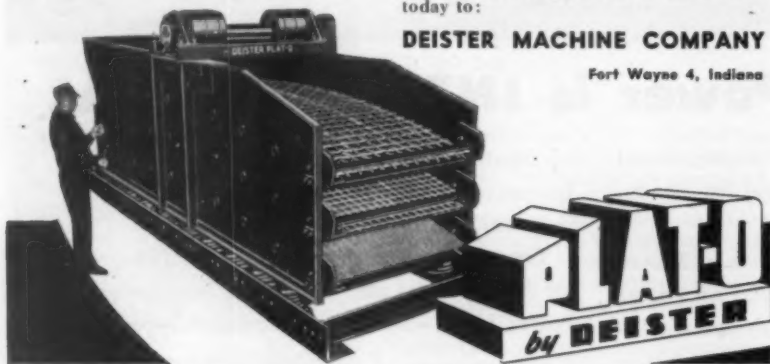
At the Pipe Creek Stone Company, Sweetser, Indiana—one of eight aggregates plants operated by the Irving brothers—Plat-O Vibrating Screens are standard grading equipment . . . standard because, throughout the years, they have proved the answer to better sizing—cheaper. F. W. (Jake) Irving operates the 1800-ton a day Pipe Creek plant the year round, 24 hours daily during peak periods, producing everything from agricultural limestone up . . . and does the job with four Plat-O Screens.

The Irving brothers have purchased 20 Plat-O Screens since 1931, and all 20 are still in operation . . . still taking a tough pounding hour after hour . . . still producing aggregates in a wide range of sizes—accurately and cheaply.

Irving brothers are among the many aggregates operators who have found it more profitable to standardize on Plat-O Vibrating Screens. Why not take a tip from these repeat order buyers by inquiring about Plat-O Screens for your operations? For complete information, write today to:

DEISTER MACHINE COMPANY

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made to meet the needs of ROCK PRODUCTS OPERATORS

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- Internally lubricated
- PREformed
- Made by craftsmen with years of experience

... the CORRECT Rope for your equipment
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Ft. Worth, Portland, Seattle, San Francisco
Distributors throughout the U. S. A.

Machinery Available

(Continued from page 94)

ages of materials and men are eliminated." — Quinn Wire and Iron Works.

"No reconversion. We can deliver standard Towmotor models in November and December after current backlog of orders is filled."—Towmotor Corp.

"Replying to your wire regarding reconversion, our setup for manufacturing concrete products machinery has been in operation all during the war. We are still filling rated orders and will be for some little time to come. As materials are released, additional facilities used in other war work are expected to aid in filling needs of the industry with increased production. The tremendous volume of concrete masonry units used in Government war building construction is a tribute to the industry and we foresee this modern building material taking first place as the major item in construction of all types of buildings." — Besser Manufacturing Co.

"No product reconversion problems exist in the plants of the Hyster Co., Portland, Oregon, and Peoria, Ill. The Hyster Co. will supply civilian needs with the same products it produced during the war because the entire line of Hyster lift trucks, ranging in capacities from 2000 to 30,000 lb., is equipped with pneumatic tires. The Army and Navy during the war required almost the entire production of the company. With the war's end, civilian orders are now being booked for fast delivery."—Hyster Co., Dar Johnson.

"This company has for the past two years been very busy building equipment for the manufacture of concrete pipe for our forces in the South Pacific. All orders now having been cancelled, we are ready to start production immediately of concrete pipe equipment for the concrete products industry."—The Universal Concrete Pipe Co., H. Eschenbrenner.

"Along with our war work which merited four Army-Navy E Awards, Stearns expanded rapidly enough to permit continued production of block machinery throughout the war at the pre-war rate. Reconversion problem consists of clearing and utilizing greatly expanded space and equipment already on hand. Within a few weeks, Stearns will be rapidly catching up on backlog of unfilled orders and be in position to give prompt service and shipment on sharply increased demand for block machinery. We anticipate that concrete products manufacturers will experience prolonged period of enlarged sales volume necessitating their operating at capacity. Stearns sends victory greetings to the concrete products industry."—Stearns Manufacturing Co., Gene Olsen, president.

"We have no reconversion problem, as we have been manufacturing

our standard equipment almost exclusively for the entire period of the war. Our Akins classifier is used in connection with closed-circuit grinding as practiced in wet process cement plants and these units are also used for sand washing. While we have in the past manufactured crushers, crushing rolls, and ball mills, we have not been pushing these lines during the war due to unsatisfactory price ceilings, so that the Akins classifier is the principal product which we will have to offer the cement industry." — Colorado Iron Works Co., F. B. Howland.

Classifiers, Concentrators, Washers, Electrical, Miscellaneous

"Our company has completed virtually all war contracts. Its staff and facilities for testing, pilot plant work and production of equipment for cement and other divisions of rock products industry are immediately available." — The Dorr Co., A. D. Harvey.

"Now ready to make prompt delivery on orders for Deister Plat-O vibrating screens, sand classifiers and concentrating tables for glass sand cleaning." — Deister Machine Co.

"Now ready to accept orders for electrical equipment for rock products and cement industry. More and more of our facilities will become available daily and by the first of the year we expect to be able to ship any equipment to meet customers' needs. Although we have received many cancellations valued at many millions most of this was scheduled for shipment late in 1946 or 1947. Due to immediate need of peacetime industry our factory load will not decrease for some time. We will know in a few days what cancellations mean and be able to predict future shipment." — General Electric Co., W. H. Mott.

"We have no reconversion problem whatsoever as our regular products went to many of the most critical war projects as well as being used on the Army engineers' portable plants in all war theatres. Therefore our plant is ready to produce and we are making fairly reasonable deliveries, but as a result of the war and depletion of manpower we have job opportunities for competent men in all departments to triple our present working force and thereby use our full plant facilities. We have the demand for our products, we will in due course secure the manpower." — Eagle Iron Works, Theo. Aulmann.

"We expect to have our postwar products design and specifications ready in about three months. We do not contemplate new products at present but will offer improvements in efficiency and convenience of operation. We have a fairly large backlog on account of orders placed when limitations were removed and the

(Continued on page 98)

CLASSIFIER PERFORMANCE QUIZ!

NAME OF CLASSIFIER... EAGLE...

Q. 1. DOES IT CLASSIFY MATERIALS EFFECTIVELY?

Ans. Yes. Eagle Classifiers are designed to take care of the individual conditions encountered. They are in service today handling materials as fine as 350 mesh. The basic principles necessary for effective settling, classifying and dehydrating—longer tubs, fresh water inlet control, adjustable baffles, etc., are built into every Eagle.

Q. 2. DOES IT DEWATER EFFICIENTLY?

Ans. Yes. The Eagle's longer tub and carefully designed screw permit reduction of moisture content to be controlled to a high degree. When handling material up to 100 mesh, reduction to 9-10% moisture content is possible.

Q. 3. IS IT ECONOMICAL TO MAINTAIN?

Ans. Yes. Interchangeable sectional screw flights permit replacement of lower section (which receives most wear) while upper section is still good. All flights are cast of special, chilled alloy steel with a wearing surface hardness of 600 Brinell. Drive bevels and pinions are precision cut steel gears. Timken roller thrust bearings are used on upper end of screw shafts. Marine type composition bearings are used on the lower end of screw shafts. All materials are selected for efficient performance and long life.

Q. 4. WILL IT DO MY JOB?

Ans. Yes. Eagle Classifiers are made in many different sizes and styles, both single and multiple screw types. Special attachments and adaptations are used to meet unusual conditions.



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Eagle
"feather"
your nest!"

EAGLE IRON WORKS
137 Holcomb Avenue
Des Moines, Iowa

EAGLE Specialized Sand and Gravel Equipment
"SWINER" DREDGE LADDERS — SCREW WASHERS
LOG WASHERS — DEHYDRATORS — SAND TANKS
CLASSIFIERS — REVOLVING SCREENS
EAGLE IRON WORKS
DES MOINES, IOWA

"SERVING INDUSTRY FOR OVER SEVENTY YEARS"

WANT YOUR MOTO-MIXER TO

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- LAST LONGER?
- OPERATE MORE ECONOMICALLY?

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FREE BOOK

Here's the book that tells you just what and what not to do to get the most from your Rex Moto-Mixer! It tells you how to clean your machine and how often... how to take care of the chain drive... how to care for the water system, the drum rollers, drum brakes, transmission, engine and other important parts. You'll find information on lubrication, and complete lubrication charts. And you'll find valuable hints on operating that will enable you to get the most from your Moto-Mixer. There's a check list that will simplify your periodic check ups.

Send for your Free copy of "A Guide to the Wartime Care and Maintenance of Rex Moto-Mixers," today! You'll find it written in a free-and-easy manner that will make you really enjoy reading it. Address Chain Belt Company, 1695 West Bruce Street, Milwaukee 4, Wis.



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CHAIN BELT COMPANY OF MILWAUKEE
CONSTRUCTION MACHINERY



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PAVERS



PUMPCRETES



MOTO-MIXERS



MIXERS

PULVERIZERS for the reduction of Cement Materials, Limestone, Agricultural Limestone, Fire Clay and All Dry, Refractory Materials.

Capacities: 1 to 60 tons per hour

Finenesses: 20 to 350 mesh

BRADLEY PULVERIZER CO.

ALLENTOWN, PENNA.

To Increase Capacities or Fineness of Present Grinding Plant—
To Reduce Power and Maintenance Costs—
To Insure an Absolutely Uniform Product—

Use the **BRADLEY AIR SEPARATOR**

Machinery Available

(Continued from page 97)

improved models therefore will be available in the Spring at the earliest except for clamshell buckets which can be shipped in a week or so."—George Haiss Manufacturing Co., A. W. Haiss, president.

"We have not had any reconversion problem. While we have been on high priority defense work all during the war the bulk of the shipments have been our standard equipment. Up to this time we have had no cancellations and our plant is very busy and working 48 to 60 hours a week. Our most serious handicap is the shortage of core makers, molders and laborers. We are in position to take on additional work for any of the rock products industries. We have every reason to believe from the information which we receive through reports, correspondence, etc., that an enormous amount of new as well as repair part business will be placed in the months ahead."—McLanahan & Stone Corp., Ward McLanahan.

"Our backlog of non-priority orders is being processed as fast as we can possibly put them through the shop. We have no reconversion problem because our war orders involved our standard machines, which were considered essential to the war effort. Our big problem at present is the development of new, more efficient equipment for the rock products industry. None of these can be announced as yet."—The Elmco Corp., D. W. Saunders, manager, sales promotion.

"Our shop has only engaged partially in war work for approximately a year and during that period we have been supplying standard equipment to export customers with high priorities. Our war contracts, except in a very few instances, involved the production of standard equipment only, so that our reconversion was a very simple problem and we are now prepared to accept orders for any standard equipment either with or without priority for prompt shipment. Judging from the response of our suppliers, both in raw materials and castings, we do not anticipate any difficulty in replenishing our stocks as mill shipments are now offered within 30 to 60 days and we feel sure that by the first of January, 1946, all materials will be available in almost unlimited quantities. Possibly the pent-up demand may, at first, exceed the available supply in the direction of construction equipment but this condition should certainly be overcome within a period of a year to 18 months."—Universal Road Machinery Co., A. B. Shufeldt.

"We would say that we are in a very good position right now to supply the portland cement industry with rock drills and other tools that they need. During the war, our company produced an unprecedented

amount of this sort of equipment, and with the cancellations coming in from the various services, it is a simple matter to revert these products over to the normal uses for which they were originally designed." —Independent Pneumatic Tool Co., Neil C. Hurley, Jr.

"Bucyrus-Erie faces no reconversion problem since almost our entire wartime output consisted of products in our regular line. All standard models are or will be in production shortly." —Bucyrus-Erie Company, E. M. Heuston, acting publicity manager.

"C. B. Stainback, manager, Industrial Department, states: "Throughout the entire war period Westinghouse has been filling orders from portland cement, rock products and other allied industries. Termination of direct war orders has already shown marked improvement in our ability to serve these industries with all types of electrical and steam equipment on much shorter deliveries. Many new developments for these industries include such items as high voltage electronic rectifiers or dust precipitators, new methods of load control for grinding mills for increased output, and Rototrol for improved performance and increased output for shovels and draglines." —Westinghouse Electric Corp., Peter White, editorial service.

"We can take orders immediately for early 1946 delivery." —The Cooper-Bessemer Corp., E. Bonnist.

"We were producing three models during war, namely, 2-cu. yd., 3/4-cu. yd. and 20-ton Motocranes. Started shipping civilian orders day after V-J. Will take until January first to reconvert to full product line because need time for material deliveries." —Thew Shovel Co., M. B. Garber.

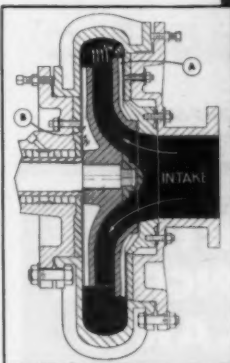
"We are glad to say that no reconversion problem is involved in meeting the requirements of the cement and allied industries for our materials. Our facilities have been fully employed in making our regular line of spiral welded pipe, Taylor forge fittings for pipe welding, forged steel flanges, etc., for war purposes, and we are therefore prepared to furnish such products for the peacetime market without major changes in our plant." —Taylor Forge and Pipe Works, G. F. Sherman, advertising and sales promotion manager.

Airport Aggregates

SOME IDEA AS to the extensive market for aggregates offered by airport construction are some figures released concerning the Canton-Akron Memorial airport now under construction. To lay the 8-in. sand sub-base for the runways; 120,000 tons of sand will be needed and 170,000 tons of gravel will be required to put a 9-in. gravel layer on top of the sand. Two inches of blacktop will be put over the gravel. This is not a military airport, but some federal funds were advanced for its construction.

Engineered to Pump HEAVY CEMENT SLURRIES

With
LESS WEAR
and
REPLACEMENTS
Greater
Sustained
EFFICIENCY



Engineered for handling the heavy mixtures that make up cement-mill slurries, this Morris Type "S" Slurry Pump incorporates advanced hydraulic practice with design features that produce high-output . . . long sustained efficiency . . . and a reduced rate of wear.

The sturdy shell—ribbed for extra strength—is proportioned in thickness to the wear expected at various points so that the entire shell remains serviceable until completely worn out. An unusually rugged shaft and bearing assembly provides vibrationless operation. Alloy steel shaft sleeves and extra deep stuffing box containing 7 turns of packing, insure freedom from packing troubles. The impeller is adjustable axially to compensate for wear. The net result is longer life, higher sustained efficiency, and a marked saving in replacement parts.

MORRIS ADVANCED IMPELLER DESIGN INSURES LONG WEAR

- External ribs of longer diameter on the suction side of the impeller—an exclusive Morris feature—set up a higher localized pressure than exists in the pump shell (see A in the diagram), reducing recirculation of abrasive solids between the impeller and the suction disc, and cutting down eddy losses and leakage.

- Other vanes on the opposite side of the impeller (see B in the diagram), create a flow away from the stuffing box, reducing the pressure at that point and substantially increasing the life of the packing.

Let our engineers consult with you on your slurry pump problems. They'll give you the benefit of 81 years of pump-building experience. No charge. No obligation. Write for bulletin #173.

MORRIS MACHINE WORKS
BALDWINVILLE, N. Y.

Branch Offices in Principal Cities

MORRIS

CENTRIFUGAL PUMPS

TESTED and APPROVED for use on high tensile strength wire rope, by Underwriters' Laboratories—official testing laboratories for insurance companies.

ONE SAFE-LINE CLAMP is designed to hold any wire rope without slipping. WIRE ENDS ENCLOSED. No needle-sharp wire ends, nuts and bolts exposed to injure workman's hands.

STREAMLINED! Will not catch on clothing nor on mechanical apparatus. Will not foul. HOLDS A TIGHT THIMBLE. When thimbles are used they will not loosen and fall out.

SAFE-LINE

WIRE ROPE CLAMPS

THAT'S WHY
IT NEVER
SLIPS



Write for details of this—the only PERFECTED wire rope clamp on the market. Millions used by Manufacturers, the Armed Forces and Industries.

NATIONAL PRODUCTION COMPANY

4583 ST. JEAN AVENUE

DETROIT 13, MICHIGAN

STRAYER PORTABLE CONCRETE PLANTS



Make 20 to 40 yards of specification concrete per hour on the job. One-man operation and a helper to

20 to 40
YARDS
PER
HR.

handle cement bags. One hour to set up. Move from job to job. Write for booklet today to 759 Geist Rd.

ERIE STEEL CONSTRUCTION CO.

ERIE, PENNSYLVANIA

Aggregators • Buckets • Concrete Plants • Traveling Cranes

Washing System

(Continued from page 72)

pipe extends through the axis of the screens and is perforated so that the sand and gravel receive washing throughout the length of the screens.

Sized gravel drops by chute to three below-ground-level bins, constructed of concrete. Sand is sent from the screens by gravity to a sand drag. Here it is dewatered and then discharged to a concrete below-ground-level storage pit. Individual 10-hp. G.-E. motors provide power for the screens and the sand drag.

Waste water from the sand drag returns to the water supply pit through an 8-in. pipe. Since some water accompanies the gravel and the sand into the storage pits, pumps are provided to remove this surplus. The sand pit is equipped with a G.H. & E. pump with a 3-in. suction and discharge, using a 3-hp. gasoline motor for power. This pump is connected to the larger pump which provides the water for washing, and is used as a primer for that pump. A Fairbanks-Morse pump, with 6-in. suction and 5-in. discharge, driven by a 5-hp. G.-E. motor handles the water in the gravel bins. Water pumped out of the bins is sent through concrete troughs to a sump from which it goes to the water supply pit through a ditch.

A Speedcrane with a 1-cu. yd. clam-shell bucket, powered by an 85-hp. gasoline Hercules motor, and a P. & H. crane with a 1-cu. yd. clamshell bucket, powered by a 100-hp. Waukesha gasoline motor, remove sand and gravel from the bins for stockpiling. They also load trucks as well as charge a two-compartment Johnson bin. The bin is equipped with weigh batcher and scales.

C. H. Jackson is president of the J. Fred Smith Gravel Co.; C. L. Knight is superintendent; and C. M. Haynes is plant foreman.

Laboratory Calculations

(Continued from page 73)

is based upon the addition of 0.01 percent solids by weight to the feed. The addition is per minute of opera-

TABLE 2

| A | B | C | D | E |
|-----|------|-----|-----|-----|
| 10 | 2.8 | 18 | 30 | 20 |
| 20 | 5.7 | 36 | 60 | 40 |
| 30 | 8.5 | 54 | 90 | 60 |
| 40 | 11.4 | 72 | 120 | 80 |
| 50 | 14.2 | 91 | 150 | 100 |
| 60 | 17.0 | 109 | 180 | 120 |
| 70 | 19.9 | 127 | 210 | 140 |
| 80 | 22.7 | 145 | 240 | 160 |
| 90 | 25.5 | 163 | 270 | 180 |
| 100 | 28.4 | 181 | 300 | 200 |
| 110 | 31.2 | 199 | 330 | 220 |
| 120 | 34.1 | 217 | 360 | 240 |
| 130 | 36.9 | 235 | 390 | 260 |
| 140 | 39.8 | 253 | 420 | 280 |
| 150 | 42.6 | 271 | 450 | 300 |
| 160 | 45.4 | 290 | 480 | 320 |
| 170 | 48.3 | 308 | 510 | 340 |
| 180 | 51.1 | 326 | 540 | 360 |
| 190 | 54.0 | 344 | 570 | 380 |
| 200 | 56.8 | 362 | 600 | 400 |

tion, a convenient addition or checking interval. Several states in which additives are commonly used are given.

The dry solids weights for the above table are determined from the equation:

$$\text{Gm./min.} = \frac{(\text{bbl./hr.}) (376) (454)}{(\% \text{ addition})}$$

$$(60) (100)$$

The dry weight values are converted to volume of 15 percent solution on the basis of the mean specific gravity of the substances commonly used in this state, T.D.A., R.D.A., etc.

In Table 2,

A is the mill feed rate in barrels per hour (376 lb.).

B is the grams per minute dry solids solution for 0.01 percent.

C is the ml. per minute addition of a solution containing 15 percent solids that will result in an 0.01 percent solids addition.

D is the ml. per minute addition of a solution containing 15 percent solids that will result in an addition of one ounce of solids per bbl. of feed.

E is the ml. per minute addition of a liquid of 0.90 specific gravity that will result in an addition of 0.01 percent by weight.

The general formula may be reduced for the respective columns as noted below:

B—Grams per minute equals 0.284A.

C—Ml. per minute equals 1.81A.

D—Ml. per minute equals 3.0A.

E—Ml. per minute equals 2.0A.

Example solution—

To add 0.025 percent solid material as a 15 percent solution to a feed being ground at the rate of 135 bbl. per hr.

From Table 2, column C, $244 \times 2.5 = 610$ ml./minute, or, $1.81 \times 135 \times 2.5 = 610$ ml./minute.

The tabulated values, as noted, are additions to the feed and not amounts that will result in the product containing the indicated percentage. In view of the fact that the quantity of addition used is generally based upon the requirements of performance tests made on the product, the values are adequate for the intended purpose.

In cases in which an addition is to be made that will result in a definite percentage content of the product, it is convenient to use the equation below:

$$A = A'F + ((A')^2 / (F - A'))$$

where,

A = pounds addition in time T,

F = pounds feed in time T,

A' = percent additive desired in product, expressed as a decimal.

Example solution:

Feed is 50 bbl./hr. or 18800 lb.

Product to contain 1.3 percent additive.

$A = (0.013 \times 18800) + ((0.013 \times 18800)^2 / 18800 - (0.013 \times 18800))$, or, 247.6 lb. per hr. addition.

Check:

$247.6 / 18800 + 247.6 = 0.013$ or 1.30 percent.



...how simple they are!

There are fewer parts in Carver pumps because every part does its job right. No gadgets have to be added to step up efficiency or correct faults. Impellers are scientifically designed with web-reinforced vanes confining wear to but one side. Renewable liners carry a cast lug protecting the scroll casing at the impeller cut-off where wear is greatest. The wearing surface seal rings of the Carver Lifetime Seal are made of Tungsten Carbide—a material so hard it cuts glass like a diamond.

Every Carver Pump carries a "Certified" tag which means that it has been carefully tested and fully meets our high standards for performance on the job. Write for details or see your local distributor.



THE CARVER PUMP CO.
Muscatine, Iowa

CARVER CENTRIFUGAL Certified PUMPS

IT DOESN'T COST—IT PAYS TO USE *American* CRUSHERS



AMERICAN Swing Hammer CRUSHER

With its capacity to boost tonnage and its rugged, exacting construction to give continuous, troublefree service at low operating cost—American Crushers start paying their way as soon as they're put on the job.

Whether your operation calls for a workhouse job or a giant task—there's an American type and size to meet your specifications.

Heavy Duty construction of reinforced castings with machine-fitted sections, manganese steel hammers and crushing chamber lining, cast steel discs centered on heavy alloy steel shaft mounted in SKF spherical roller bearings, housed in grease lubricated, dust-tight pillow blocks.

American

Write for descriptive Bulletin
PULVERIZER COMPANY

Originators and Manufacturers of
Ring Crushers and Pulverizers

1245 Macklind Avenue
St. Louis 10, Missouri

CUT SHOVELING COSTS 2 WAYS!

- 1 **MOVE MORE MATERIAL PER DAY:** Because of its special construction with tapered blade thickness and tubular shank, RAZOR-BACK gives you a perfectly balanced shovel of full 13 gauge strength but only 15 gauge weight. Speeds handling of material.
- 2 **REPLACE FEWER SHOVELS PER YEAR:** In addition to its long center "backbone" of 13 gauge steel, which reinforces cutting edge, frog and socket, every RAZOR-BACK is "Surface Peened" after heat treatment, actually tests $2\frac{1}{2}$ to 5 times tougher than fine shovels merely heat treated.

Forged in One
Piece, with
Extra Long
11 in. Socket.

Send for Catalog. Prices and Distributor's Name
THE UNION FORK & HOE CO.
640 Hecking St., Columbus 15, Ohio



RAZOR-BACK
THE SHOVEL WITH A BACKBONE

ALSO STONE, BALLAST, INDUSTRIAL FORKS — ASPHALT AND ROAD RAKES

OBITUARIES

LOUIS BROOKMAN, Jr., publisher of *Concrete*, died August 11 in Chicago. Louie was held in the highest respect by the staff of *Rock Products* and leaves many close friends particularly



Louis Brookman

among concrete products producers and machinery manufacturers. Louie was extremely active in affairs of the concrete products industry and, to mention a single outstanding achievement, will be remembered for his outstanding success in managing the Concrete Industries Expositions held in Chicago prior to the war. The publication *Concrete* is going forward without interruption.

GUY O. GARDNER, production manager and director of research, Ash Grove Lime and Portland Cement Co., Kansas City, Mo., died August 5. Mr. Gardner formerly was chemist of the company and an active member of Committee C1 of the American Society for Testing Materials.

CALVIN W. KELS, formerly superintendent of the Marcem Quarries Corp., an affiliate of the old Clinchfield Portland Cement Corp., now the Penn-Dixie Cement Corp. of Kingsport, Tenn., died recently at the age of 62.

NEIL I. MCARTHUR, vice-president of the Great Lakes Foundry and Sand Co., Detroit, Mich., died recently.

WILLIAM R. MAHAN, owner and operator of the Central Oolitic Stone Co., Bloomington, Ind., which later became the Shawnee Stone Co., died recently in Palm Beach, Fla., while visiting his daughter. He was 77 years old, and had retired seven years ago.

A. W. HARRISON, president of the Lutesville Sand and Gravel Co., Cape Girardeau, Mo., passed away recently.

FINANCIAL

RECENT DIVIDENDS

| | |
|--|-----------------|
| Canada Cement Co. Ltd. | |
| 8½% pfd. | \$1.25 Sept. 20 |
| Canada Crushed Stone Ltd. .10 Sept. 20 | |
| Pennsylvania Glass Sand Corp. 5% pfd. | 1.25 Oct. 1 |
| Pennsylvania Glass Sand Corp. | 25 Oct. 1 |
| Schumacher Wall Board Corp. | 20 Aug. 15 |
| Schumacher Wall Board Corp. pfd. | 50 Aug. 15 |
| U. S. Gypsum Co. | 50 Oct. 1 |
| U. S. Gypsum Co. pfd. | 1.75 Oct. 1 |

UNITED STATES GYPSUM Co., Chicago, Ill., presented the following consolidated statement of earnings for the six months ended June 30:

| | 1945 | 1944 |
|---------------------------------|-------------|-------------|
| Operating profit ... | \$5,780,399 | \$5,035,041 |
| Depreciation and depletion | 1,132,914 | 1,135,402 |
| Net oper. profit.... | 4,647,485 | 3,899,640 |
| Other income | 288,185 | 254,626 |
| Total income.... | 4,935,670 | 4,154,265 |
| Fed. anti-tr. expense | 26,454 | 126,999 |
| Inc. & pr. tax, net. | 2,553,000 | 1,857,000 |
| Net income | 2,356,217 | 2,170,266 |
| Preferred divs.... | 273,777 | 273,777 |
| Common divs.... | 1,197,512 | 1,197,140 |
| Surplus for period. | 884,928 | 699,349 |
| Earn., pfd. share.. | \$30.12 | \$27.74 |
| No. of pfd. shares.. | 78,222 | 78,222 |

Note: Company is subject to renegotiation of contracts.

ALBERENE STONE CORPORATION of Virginia, New York, N. Y., had a net income of \$13,053 for the six months ended June 30, 1945, as compared with a net loss of \$17,639 for a like period ended June 30, 1944. Net sales for the first half of 1945 were \$51,212 as against \$37,309 for the first half of 1944.

PENNSYLVANIA GLASS SAND CORPORATION, Lewistown, Penn., showed a net profit of \$263,346 for the six months ended June 30, 1945. This compares with \$278,746 for the first half of 1944.

NATIONAL GYPSUM Co., Buffalo, N. Y., showed the following statement of earnings for the six months ended June 30:

| | 1945 | 1944 |
|------------------------------------|--------------|--------------|
| Net sales | \$13,963,217 | \$12,066,979 |
| Cost of sales.... | 10,775,262 | 9,262,675 |
| Selling, etc., expense | 1,465,770 | 1,424,222 |
| Depreciation, depletion, etc. | 512,998 | 486,639 |
| Operating profit.. | 1,209,189 | 893,443 |
| Other income | 190,235 | 184,344 |
| Total income.... | 1,399,424 | 1,077,787 |
| Interest, etc.... | 104,859 | 95,493 |
| Doubt. accts., etc. | 15,278 | 13,507 |
| Other deductions. | 94,628 | 54,517 |
| Inc. & prof. tax.. | 665,100 | 419,500 |
| Net profit | 519,559 | 404,770 |
| Times chg. earn. | 12.30 | 10.57 |
| Earn., pfd. share. | \$8.00 | \$7.61 |
| No. of pfd. shares. | 64,980 | 64,980 |

Includes fees earned under cost-plus-fixed-fee contract; 3 mos. 1945, \$57,376; 1944, \$52,240; 6 mos., 1945, \$115,156; 1944, \$103,545.

Before income and profits taxes. President Melvin H. Baker announced in a report to stockholders that the first of its new products for

Amsco "COUNTERFLOW" Pumps Offer the Key to Profitable Sand and Gravel Dredging

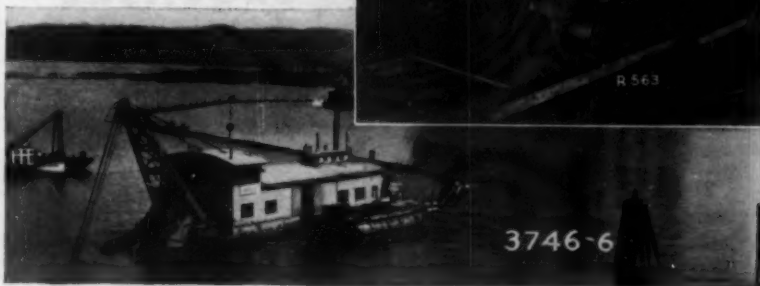
Wherever sand and gravel are being dredged at lowest cost and with minimum maintainance and shut-down time, you are likely to find an Amsco "COUNTERFLOW" Pump on the job. For steady, economical, trouble-free dredging of aggregates, the sand and gravel industry has voted overwhelmingly with its equipment dollars for Amsco manganese steel pumps. More Amsco dredge pumps are used for sand and gravel production than any other make, and for definite reasons.

The water ends including shells, impellers, side plates and liners of Amsco dredge pumps are made of austenitic manganese steel which, beyond comparison, resists abrasion associated with severe repeated impacts. No other metal will so long and well withstand the destructive action of the material handled.

end thrust and internal leakage. The funnel-mouthed impeller with wide throat passages assures minimum flow resistance. Another valuable feature of Amsco design is the method of securely attaching the impeller to the shaft, either with threads or tapered bore and locknut.

The toughness and wear hardness of Amsco manganese steel make it ideal, also for rotary cutters and for dredge pipeline fittings, pipe elbows, nipples, reducers, expansion joints and flap valves.

Send for literature on Amsco dredge pumps and Bulletin 844-D — "Manganese Steel For All Dredging Purposes."



The "COUNTERFLOW" design of Amsco dredge pumps forces circulation of clear water between the impeller shrouds and the side plate liners, reducing abrasive wear and minimizing

R-563. 16" Amsco "COUNTERFLOW" Dredge Pump, Type "XH-CF", Form 44, used on dredge which produced sand and gravel for the Arkabutla Dam.

3746-6. The Dredge "America", equipped with a 16" Amsco Dredge Pump, Type "XH", Form 44, for "hogging" aggregates out of the Illinois River.

Amsco Conservation Welding Products prolong service life of ferrous parts. Send for Bulletin 941-W

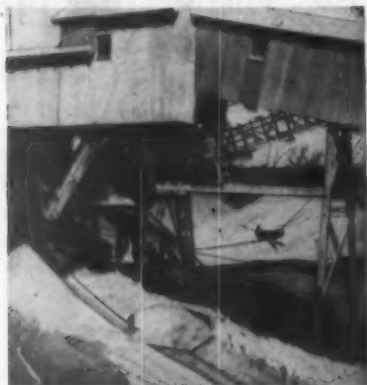
Amsco

AMERICAN MANGANESE STEEL DIVISION
Chicago Heights, Illinois

AMERICAN
Brake Shoe
COMPANY

FOUNDRIES AT CHICAGO HEIGHTS, ILL.; NEW CASTLE, DEL.; DENVER, COLO.; OAKLAND, CALIF.; LOS ANGELES, CALIF.; ST. LOUIS, MO.
OFFICES IN PRINCIPAL CITIES

CUT YOUR HANDLING COSTS



EXPLANATION OF PICTURE—

Two small Crescent Scrapers handle stockpiles covering ground on both sides of a conveyor running from mill to loading station at a dolomite processing plant.

The scraper in the foreground of the picture is stockpiling out screenings that are spouted onto the ground from the conveyor. This product is sold to the fertilizer trade with demand coming mainly in the Spring months. Upwards of 25,000 tons accumulate between seasons. The scraper piles up this surplus during nine months of the year and then works overtime in the Spring to retain the stored material.

The other scraper on the far side of the conveyor, has a different task. It stockpiles the overflow of dolomite when the crushers are producing more than the kilns can take care of and it remains from the pile when-over quarry or crusher operations are interrupted.

with a streamlined CRESCENT Scraper

IN gravel excavation, stripping and stockpiling Saurman Crescent scraper buckets have proved their ability to dig and convey large tonnages of gravel, clay, loose ore, etc., at costs of a few cents per ton.

Secret of this efficiency is in the streamline design of this unique scraper. A "Crescent" penetrates hard materials with ease of a plowshare, and both in digging and hauling it requires less line-pull than any other scraper of equal capacity.

For complete data on the various sizes of Crescent scrapers, methods of operation, etc., write for Catalog 19-J.

SAUERMAN BROS., Inc.

530 S. Clinton St., Chicago 7, Ill.



FARREL-BACON

CRUSHERS

Complete plants designed and equipped, including Screens, Elevators and Conveyors. Machinery for Mines and Rock Quarries, Sand and Gravel Plants.

Engineering Service

FARREL-BACON
ANSONIA, CONN.

UNIVERSAL VIBRATING SCREENS

give best results

Guaranteed to give you best results on your most difficult separations. UNIVERSALS are of rugged yet simple construction, lowest in first cost and in maintenance. UNIVERSALS have been tried and proved in 25 years of dependable service.

Write for 32-page catalog on screens and screening.



Type
"MR"
42"x96"
Double
Deck

★ ★ ★ **UNIVERSAL VIBRATING SCREEN CO.** ★ ★ ★
RACINE - WISCONSIN

the postwar era is a gypsum sheathing with a water-repellant finish. The board is protected from moisture so that no building paper or asphalt felt is needed under the final exterior finish. He also said that after a three-year interruption, shipments of gypsum from the company's quarries at Dingwall, Nova Scotia are being moved again to British and Canadian ports as well as to the company's Atlantic seaboard plants.

LONE STAR CEMENT CORPORATION, New York, N. Y., presented the following statement of earnings for the six months' period ended June 30:

| | 1945 | 1944 |
|----------------------------------|--------------|--------------|
| Sales | \$14,210,257 | \$13,443,324 |
| Cost of sales | 9,745,571 | 8,926,687 |
| Selling, etc., expense | 1,382,730 | 1,329,727 |
| Depreciation and depletion | 927,182 | 992,948 |
| Operating profit | 2,154,774 | 2,193,962 |
| Other income | 276,520 | 215,564 |
| Total income | 2,431,294 | 2,409,526 |
| Fed. income tax | 550,798 | 568,878 |
| Other taxes | 507,198 | 533,015 |
| ①Misc. charges | 369,619 | 315,321 |
| Net profit | 1,003,679 | 992,312 |

①Includes provision for doubtful account and contingencies.

Note: Results of foreign subsidiaries included above are figured at average exchange rates, except as to provision for depreciation and depletion, which is based on dollar value of fixed assets at time properties were acquired.

UNIVERSAL ZONOLITE INSULATION Co., Chicago, Ill., manufacturer of vermiculite insulation products, presented the following income account for the years ended March 31:

| | 1945 | 1944 |
|------------------------------|-----------|-----------|
| Net sales | \$798,887 | \$822,930 |
| Cost of sales | 523,717 | 518,963 |
| Selling, etc., expense | 183,938 | 167,743 |
| Operating profit | 91,232 | 136,225 |
| Other income | 6,307 | 9,395 |
| Total income | 97,539 | 145,620 |
| Fed. income tax | 34,400 | ⑦73,500 |
| Post-war tax cred. | | cr 3,230 |
| Other deductions | 10,634 | 8,457 |
| Net profit | 52,506 | 66,892 |
| Earned per share | \$0.05 | \$0.07 |
| No. of shares | 984,112 | 984,112 |

⑦Includes excess profits taxes.

FLORIDA PORTLAND CEMENT Co., Chicago, Ill., with plant at Tampa, Fla., had a net profit of \$100,065 for the six months ended June 30, 1945, which compares with a net profit of \$199,557 for a like period in 1944. Net sales of the company for the first half of 1945 were \$1,520,489 as against \$1,396,249 for a like period in 1944.

LEHIGH PORTLAND CEMENT Co., Allentown, Penn., reported a net profit, after federal income taxes, of \$633,947 for the twelve months ended June 30, 1945, as against \$808,472 for the year ended June 30, 1944.

CONSUMERS Co., Chicago, Ill., had a net profit of \$41,000 for the six months ended June 30, 1945. This compares with \$120,000 for the first half of 1944.

Manufacturers' News

Insley Mfg. Corp., Indianapolis, Inc., has announced the appointment of Charles A. Menefee as manager of the parts and field service department. Mr. Menefee has been with the company 18 years.

F. E. Milewski, formerly associated with the W. E. Dunn Mfg. Co., announces that he has resigned from the company and is now president of the Lith-I-Bar Co., Holland, Mich. Mr. Milewski further announces that this company is no longer connected with the W. E. Dunn Mfg. Co. He reports that the equipment has been redesigned and considerably improved. The activities of the company will be confined to promotion of the Lith-I-Bar on a national basis together with the manufacture and installation of the equipment for manufacturing this product. The Lith-I-Bar is a precast concrete joist and articles about this product have been published in past issues of ROCK PRODUCTS.



F. E. Milewski

Pioneering Engineering Works, Inc., Minneapolis, Minn., has appointed William Schanep district representative in the Pacific Northwest territory, including Washington, Oregon, Idaho, western Montana, Alberta and British Columbia. His headquarters will be at Seattle, Wash.

The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., Passaic, N. J., has been presented with two U. S. Treasury citations and two citation seals which will be placed on a heavy 4-engine bomber and a medium tank, as a result of oversubscribing their quota of War Bonds in the 7th War Loan Drive.

Joshua Hendy Iron Works, Sunnyvale, Calif., has announced that Charles H. Hirst has been appointed supervisor of the reorganized mining-equipment sales department.

Barber-Greene Co., Aurora, Ill., has expanded its area sales organization by the following appointments: Capt. Earle F. Lamprey, formerly stationed at Camp Claiborne, La., has been placed in charge of the New York area; Ralph Dano, recently released by the W. P. B., now heads sales activities in Canada, with headquarters in Toronto; L. A. Larson is area sales manager of the Minneapolis territory; B. E. Lindstrom of Aurora, Ill.; E. L. Benson of San Francisco; E. H. Cooper of Dallas; and Tom Benbow of Atlanta, Ga.

The Timken Roller Bearing Co., Canton, Ohio, announces that Gilbert Soler, superintendent of the quality control departments at the Steel & Tube Division, has been named assistant general superintendent of the division.

Lima Locomotive Works, Inc., shovel and crane division, Lima, Ohio, and the Michigan Power Shovel Co., Benton Harbor, Mich., jointly announce the appointment of Hugh H. Buchanan as director of foreign operations for both concerns.

Worthington Pump & Machinery Corp., Harrison, N. J., has named Harry A. Feldbush vice-president in charge of engineering for the entire corporation, with headquarters in Harrison, N. J. Mr. Feldbush formerly was works manager of the Holyoke, Mass., plant.

Wickwire Spencer Steel Co., New York, N. Y., has elected A. G. Bussman and L. D. Granger as vice-presidents of the Wickwire-Spencer Metallurgical Corp. Dr. Bussman is also vice-president in charge of sales of the steel company and has been associated with the company since 1930.

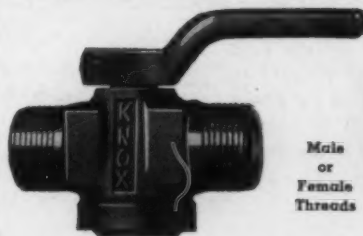
PAGE STAR PERFORMERS



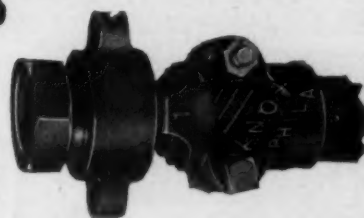
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Male
or
Female
Threads



Since 1911 Producers of

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Valve-Coupler-Nipple-Clamp-Mender

Recognized Universally as the **ULTIMATE**
in Valves and Couplings

KNOX MANUFACTURING CO.

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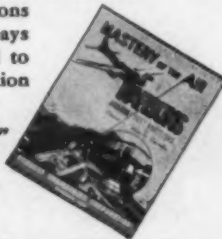


**IS YOUR PLANT EQUIPPED
FOR POST-WAR COMPETITION?**

*Reclaim Valuable Dust
... Increase Production
WITH PARSONS OVAL BAG DUST*

ARRESTORS ... Now is the time to give serious thought to your plant and equipment. Post-war competition will be keen, with demands for greater production, and working conditions that take into consideration the health of your employees. Dirt and dust deteriorate equipment ... slow up production ... decrease employee efficiency. This costly element can be eliminated with Parsons Oval Bag Dust Arrestors. Improved plant efficiency, plus lower maintenance cost on equipment, will prove that Parsons Dust Arresting Equipment actually pays for itself. Our engineers will be glad to make recommendations without obligation ... write today.

Write for booklet "Mastery of the Air"



ENGINEERING CORP.
2545 EAST 79th ST. CLEVELAND 4, OHIO

Mr. Granger has previously been assistant to the executive vice-president of the metallurgical company. He is also vice-president of the American Wire Fabrics Corp., another Wickwire Spencer subsidiary. Mr. Bussman will continue to make his headquarters at New York, N. Y. Mr. Granger will be located at the metallurgical plant and offices, Newark, N. J.

Worthington Pump & Machinery Corp., Harrison, N. J., announces that Hobart C. Ramsey, executive vice-president of the Worthington Pump & Machinery Corp., has in addition been named president of the Ransome Machinery Co., subsidiary, in Dunellen, N. J. J. G. Ten Eyck, who has just completed five years' active service with the U. S. Navy and who was formerly president of the industrial engineering firm of Ten Eyck, Inc., has been named vice-president and general manager of the Dunellen plant. Kenneth W. Horsman, formerly superintendent of welding and steel fabrication at the Worthington Harrison Works has been transferred to Ransome as works manager. Newly elected directors of the Ransome Co. are J. G. Ten Eyck and Carl F. Oechsle, vice-president in charge of sales.



Hobart C. Ramsey

Fairbanks, Morse & Co., Chicago, Ill., announces the appointment of L. A. Harlow as advertising manager. He joined the company as assistant advertising manager in 1943 and, until his recent advancement, helped supervise the many and varied advertising activities of the company.

The Foxboro Co., Foxboro, Mass., announces that Clarence Leslie Williams has joined its New York staff of sales engineers. He has been assigned to the northern New Jersey territory.

Atlas Equipment Corp., Pittsburgh, Penn., announces removal of the general offices, repair, service, and rental departments to 635 Ridge Ave., Pittsburgh, Penn.

Link-Belt Co., Chicago, Ill., has announced the appointment of A. C. Fellingner to the position of sales manager, power transmission machinery, with headquarters at the Ewart plant in Indianapolis.



H. F. R. Weber



A. C. Fellingner

Indianapolis. This change is made to fill the vacancy caused by the death of C. Walter Spalding. H. F. R. Weber, divisional sales manager, silent chain drives, will have charge of the sale and application of this product, with headquarters also at the Ewart plant. G. H. Woody will continue as sales manager of the ball and roller bearing division, with headquarters at the ball and roller bearing plant in Indianapolis. Sales through Link-Belt distributors will be supervised by F. A. Hurd, divisional sales manager, industrial distributor sales, Chicago; G. H. Unruh, division sales manager, industrial distributor sales, Philadelphia; and Harry Reisser, divisional sales manager, automotive equipment sales, Indianapolis.

ROCK PRODUCTS

CONCRETE PRODUCTS

and Cement Products

SEPTEMBER
1945

Temple in Idaho Falls, Idaho, built with precast concrete units supplied by Otto Buchner & Co., Salt Lake City, Utah.



Leadership

THATBU

The Besser Manufacturing Co. record of achievement has kept pace with the progress of the concrete products industry. For more than 40 years, Besser has devoted its constant and untiring efforts

to the manufacture of concrete block machinery, pioneering new types of machines, improving production methods and striving to attain higher standards for the industry.



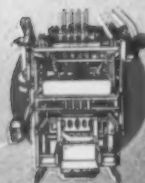
1904

The earliest Besser concrete block machine used cored pallets and was entirely hand operated.



1909

Besser was among the first to make "stripper" machines using cored pallets. "Stripping" gave much better face texture on both faces.



1914

Besser Single Automatic Face Down block machine was introduced. Capacity three 8" blocks per minute. The automatic feature of this machine marked the beginning of the big production era in the manufacture of concrete block.



1924

The Besser principle of making all units on one set of plain pallets was introduced — the greatest single advance step in the manufacture of concrete masonry units.



1934

Besser introduced the FULLY PRESSED TOP, accepted as the most highly perfected unit in quality and appearance ever offered by the industry.



1939

The Besser Automatic Vibrapac was first introduced to meet greatly increased demand for greater volume production of still higher quality concrete masonry. Power hoist makes off-bearing easy.



1941

Fast lift-truck handling and loading of blocks came into prominent use. This method has gone a long way toward speedier and more economical handling of the output of Besser machines.



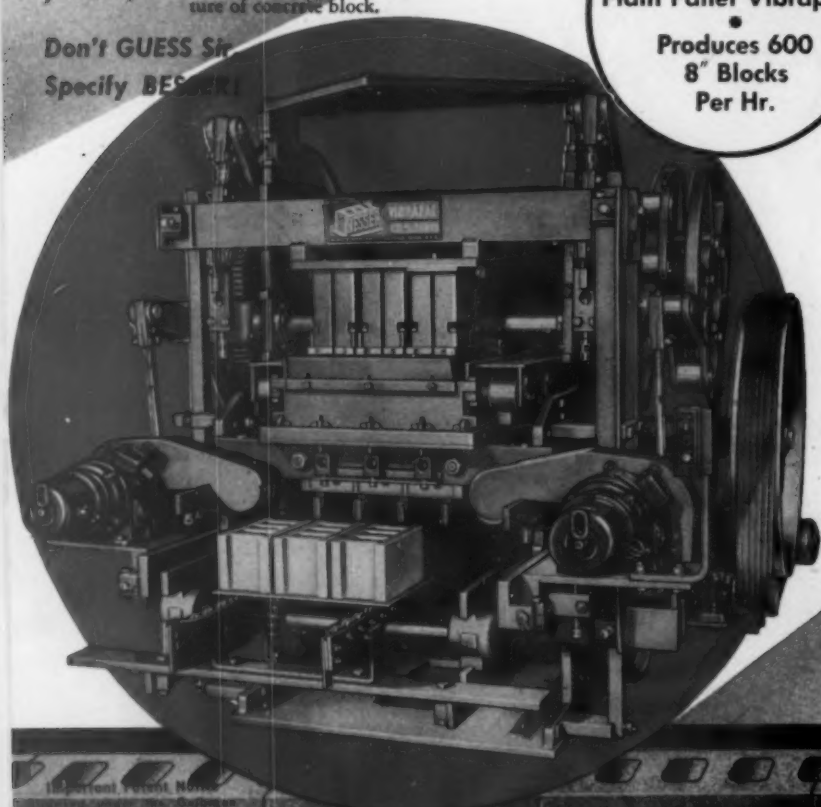
1944

A mobile yarding hoist was devised and put into operation by means of which three 8" blocks or equivalent can be removed from racks and placed on stock piles without being touched by hand. This hoist can also be used for loading trucks from stock piles. Yarding and loading greatly simplified.

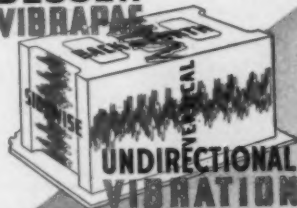
BESSER
Super Automatic
Plain Pallet Vibrapac

Produces 600
8" Blocks
Per Hr.

Don't GUESS Sir
Specify BESSER!



**BESSER
VIBRAPAC**



**BESSER
MANUFACTURING
COMPANY**

209 FORTY-FIFTH ST., ALPENA, MICHIGAN

Complete Equipment
For Concrete Products Plants

BESSER

**PLAIN
PALLET**

Leadership

VIBRACRETE

MASTER BLOCK COMPANY
CONCRETE BLOCKS . . . WASHING MACHINE . . .

PHONE MAPS 1966 - ROUTE 18 - MICHIGAN MICH

CHICAGO INSURANCE COMPANY

HAMDEN BUILDING TILE COMPANY, INC.

COLLEGE HONORARY
BANDEN, CONNECTICUT

ANCHOR CONCRETE PRODUCTS, Inc.

SAMSON
CERTIFIED
TILE

The Diamond-Lang Concrete Company

**CITIES
VEL & SUPPLY
PYRAMID BLOCKS**

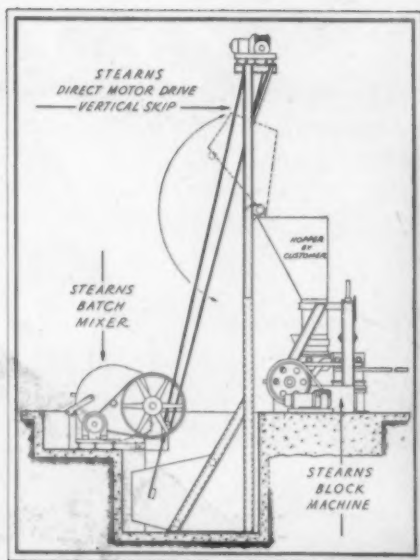
BOICE BROTHERS

POTTER COAL & MATERIAL CO.

THE SAVING IN PALLET COST
WILL PAY FOR A
BESSER VIBRAPAC
PLAIN PALLET STRIPPER



FOURTH "E" AWARDED
MARCH 10, 1945



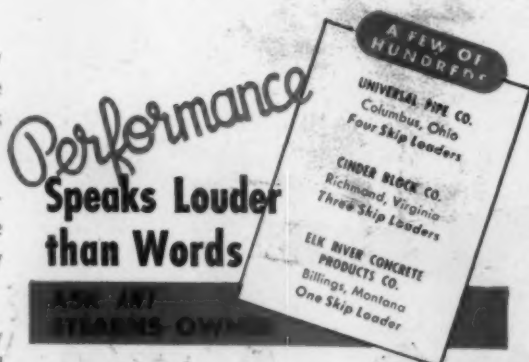
Typical Skip Loader installation
with mixer at floor level

STEARNS SKIP LOADERS

Speed Production

- **Outstanding for its labor saving efficiency** in modern concrete products plants, the Stearns Skip Loader illustrated here is readily adaptable to almost any type of plant layout.
- **Machine-floor level** operation and control is achieved by using this fully mechanized unit for conveying fresh concrete from mixers to machine hoppers or for hoisting dry materials to elevated mixers or to storage bins.
- **Push-button control** starts bucket up or down. It automatically stops when dumped and when it returns to the bottom. Other controls permit bucket to be stopped in any desired position.
- **Easily installed as a separate unit**, it may be used with any type of mixer. Independent gearhead motor drive (illustrated above) or mixer-driven type can be furnished. Track may be vertical or at any desired angle, permitting a wide range of application.

Our new Skip Loader folder illustrates three installation methods. Write for your copy today.



STEARNS

Gene Olson, President

Designers and manufacturers of vibration and tamping-type block machines • Mixers • Skip Loaders
Licensed under the basic Gelman Vibration Patents

Otto Buehner & Co., Salt Lake City, Utah, supplied architectural concrete slabs for church in Idaho Falls, Idaho



Temple constructed with cast stone units used for both facing and forming

Beautiful Temple Built With Mo-Sai

TEMPLES of religion have inspired architects to design some of the finest examples of architecture in the world in all ages. At Idaho Falls, Idaho there was recently completed a Temple of the Church of Jesus Christ of Latter Day Saints which exemplifies the unusual possibilities of reinforced concrete construction with color and texture effects produced with Mo-Sai architectural concrete slabs used as facing and forming. Otto Buehner and Co., Salt Lake City, Utah, well-known manufacturer of cast stone and concrete masonry products, supplied the Mo-Sai cast stone products.

The temple, which is two-storied, measures 95- x 132-ft. There is also a one-story annex, 34 x 172-ft. The tower, located in the center of the temple proper, rises 150-ft. above the sub-basement floor.

When it was proposed that Mo-Sai concrete slabs be used for the finished facing, acceptance of the idea was not readily obtained. However, full-size, large-area sample panels were erected, demonstrating the slabs acting as outside forming for structural concrete. This convinced the architects and church authorities, but more panels were erected, each containing different aggregates having varying textures. The type finally selected was made of a mix containing white cement and a Utah cream white onyx marble with a vertical crandelled finish of six cuts to the inch. This cut finish exposed the beauty and translucence of the aggregate.

Furthermore, in order to satisfy those interested, the aggregates were tested for durability and strength, and also the finished product for strength, water absorption and weather resistance by independent laboratories. Results indicated complete compliance with the requirements of the specification of the Cast Stone Institute, the Mo-Sai Asso-

ciates, and also the architects. The masonry contractor also was sent to the East to examine construction methods, and to the Dextone Co., New Haven, Conn., to obtain first-hand information on anchoring, tying in slabs to back-forms, and the general "know-how" of erection.

Slab Design and Manufacture

Mo-Sai slabs 2-in. thick were used, and the job required about 60,000 sq. ft. The average exposed area ranged from 30 to 50 sq. ft. each. Some individual pieces contained as much as 80 sq. ft., with integral returns 34-in. deep, as part of the slab. All were uniformly 2 in. thick, reinforced with heavy rod mesh, 4 in. on centers both ways, electrically welded and zinc-coated. Heavy strap anchor eyes which engage the $\frac{3}{8}$ -in. round tie rods were securely attached to the mesh, at not more than 24 in. on centers, both ways. Anchors and reinforcing were engineered to withstand stresses and strains incident to construction and the hydrostatic pressure of wet concrete in the forms. This unique construction permitted the architect to "pre-inspect" the surface finish and alignment of the slabs before the back-up structural concrete was poured, a very important feature of this system.

It is interesting to note that all jambs, soffits to doors and windows, and corner returns were cast as an integral part of the slab. In many cases, the soffit returns acted as the bottom of the form. This resulted in the temple appearing as though it were erected of huge blocks of stone.

The finished temple appears to be constructed of massive blocks of light cream-white onyx, into the surface of which the sunlight seems to penetrate. As the sun passes in and out of the clouds, the effect is said to be dazzling. There is a continual change of tint, texture and interest. At sun-

set, the temple takes on a light pink tint, with the shadows a distinct red, while the windows change to slabs of gold. Upon flood-lighting at night, one sees a structure that appears to be carved out of a solid block of white onyx, radiating its own light from within.

The Temple was designed by the Board of Temple Architects: E. O. Anderson, John Fetzer, Ramm Hansen, Hyrum C. Pope, Lorenzo S. Young of Salt Lake City, and Georgius Y. Cannon of Pasadena, Calif. The builder was Bird Finlayson, and the setting contractor, Thomas B. Child.

Precast Concrete House

ROYALTY BUILDERS, INC., with former headquarters in Tacoma, Wash., has been incorporated, and will construct a \$100,000 plant in Portland, Ore., which will introduce a new concrete construction material to this area. G. E. Stephens of Portland and the late Frank Krueger of Tacoma are the principal owners. The new material is a precast concrete slab insulated on the interior face and coated with a concrete veneer on the outside.

Plans are being prepared for the construction of a 300- x 400-ft. one-story plant and a 40- x 100-ft. warehouse. A Portland, Ore., real estate and construction company has been organized with Mr. Stephens as one of the principals to build houses and other structures, using the new product. Forty auto courts of two rooms each will be built in Oregon with the precast units employed for the main structural members.

Block Plant Improvements

CEMENT PRODUCTS Co., Cumberland, Md., plans to spend \$30,000 for improvements, including a new block plant and batching facilities. The block plant will cost \$15,000.

Material Handling



Looking down from railroad trestle to neat storage yard for concrete products. Steam curing rooms may be seen to the right, and garage is in the background, to the left

Spartanburg Concrete Co., Spartanburg, S. C., has tunnel conveyor system to supply aggregates for both block plant and ready mixed concrete plant

By H. E. SWANSON

Dual-Purpose Aggregate Bin System

OPERATING COSTS have been substantially reduced by means of a tunnel conveyor which serves both a ready mixed concrete plant and a concrete products plant of the Spartanburg Concrete Co., Inc., Spartanburg, S. C. Until recently, only the ready mixed concrete plant used these facilities while the block plant had an independent system for handling aggregates.

In the overall plant setup, the block plant is at one end of the tunnel and the ready mixed concrete plant is at the other. By reversing the belt conveyor in the tunnel, and by installing a bucket elevator at the concrete block plant end, both operations are now handled through the tunnel. Prior to this installation, sand and gravel aggregates for the block plant were handled as follows: Sand was trucked in and deposited into a 70-ton bin above the weigh batcher. A

ramp to the top of the bin permitted trucks to dump directly into the bin. Coarse aggregate was received in railroad cars and bottom-discharged to a track hopper. It was transferred from the hopper to a 70-ton bin by an 18-in belt conveyor, 25-ft. centers. This method of aggregate handling will be retained in the setup as an auxiliary system.

Aggregates for both plant operations are now received in railroad cars which bottom-discharge from a trestle to five separate stockpiles. Under these stockpiles is a tunnel, 170 ft. long, 7 ft. high, and 6 ft. wide, constructed of concrete, which houses a 24-in belt conveyor fed from stockpiles through 14 gates. Stockpile capacity is about 3500 tons.

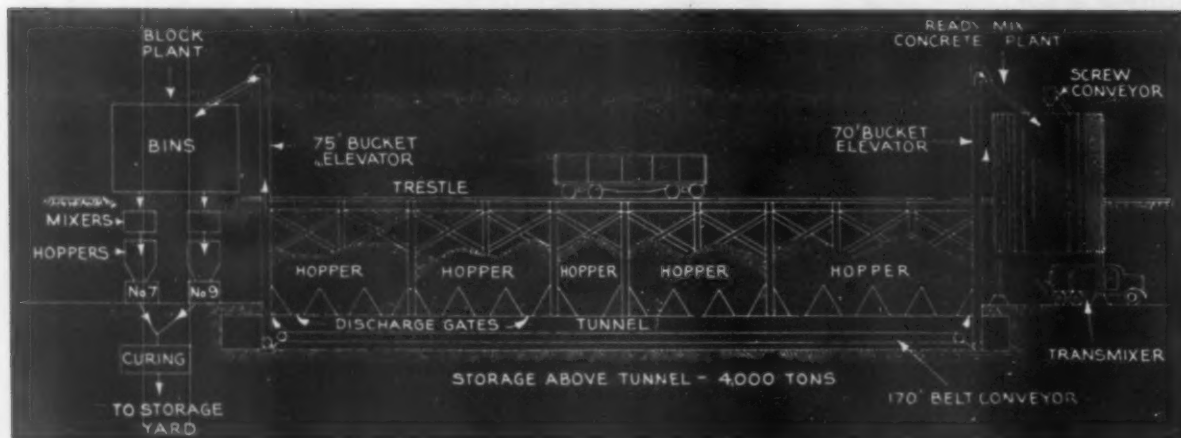
Block Plant

When sending aggregates to the block plant, the belt charges the boot

of a Chain Belt bucket elevator, 75-ft. centers, which sends the material to the bins. The bins dump aggregates by gravity to a 1-cu. yd. Butler bin batcher. The weigh batcher sends material by gravity to a 1-cu. yd. Stearns mixer. Mixed concrete also moves by gravity to the hopper of a No. 9 Stearns Joltcrete. A similar batching and mixing arrangement is installed to handle a No. 7 Stearns Joltcrete, which makes special sizes.

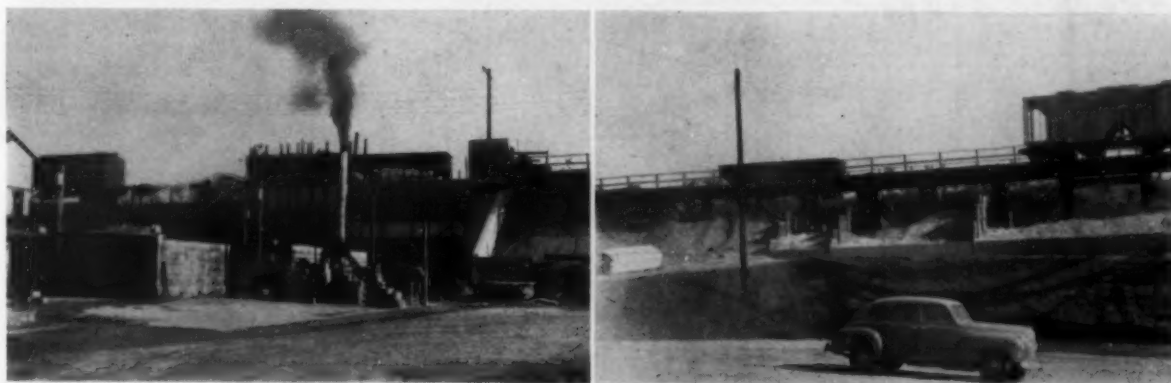
At present, cement is added to the mixer in bags, but plans already have been formulated to install a bulk cement system.

Block are placed on wooden racks, having a capacity of 50 standard 8-x 8-x 16-in. units or equivalent. The racks are moved to steam curing rooms by Barrett-Craven manual lift trucks. The three curing rooms have a capacity of 900 standard block or equivalent per room. A 20-hp. Erie



Layout of tunnel conveyor and aggregate storage system which serves both ready mixed concrete plant and block plant

MATERIAL HANDLING



Left: Block machines are housed in concrete block structure, below to the rear, with curing rooms at left and boiler in the center to provide steam. Right: Aggregate bins are loaded directly from cars on trestle. Under the bins is tunnel conveyor system which supplies ready mixed concrete plant to the right and concrete block plant to the left. Belt conveyor is reversible

coal-fed boiler supplies steam at 60 p.s.i. through a 2-in. pipe to the rooms, where the pipe is reduced to two 1-in. pipes per room. These pipes extend the length of the rooms and have $\frac{1}{8}$ -in. perforations spaced at 6 in. to thoroughly steam-cure the block. After curing, the racks are moved to a recently paved storage yard having a capacity of 90,000 units.

Ready Mixed Concrete

For ready mixed concrete operations, the tunnel conveyor moves aggregates to a bucket elevator, 70-ft. centers, which carries the material to a four-compartment Blaw-Knox bin, having a total capacity of 360 tons. Bulk cement is transported into two 500-bbl. compartments from cars on the trestle by means of a screw conveyor, 45 ft. long, set at a 31-deg. angle. Water, received from the city water supply and measured by a Neptune water meter, is kept in a 150-gal. storage tank.

Aggregates and cement move by gravity from bins to a Butler bin weigh-batcher equipped with a five-beam scale. The weigh-batcher discharges into transit mixers. All of the seven transit mixers are Smith high-dump, five with a 2-cu. yd. capacity and two with 4-cu. yd. capacity. They are mounted on Mack, Ford, and Chevrolet trucks, equipped with dual-speed rear axles for added strength.

Air-entraining cement is used exclusively in block manufacture, while regular portland, air-entraining, and high-early-strength cement are available in the ready mixed concrete plant. At present, this plant has two cement bins, but an additional bin will be constructed in the near future to provide facilities for the three types of cement.

Air-Entraining Cement

Experiments with air-entraining cement have shown that while a small decrease in strength occurs in the ready mixed concrete, the ad-

vantages of workability, density, etc., more than make up for the loss in strength. Tests made on the concrete masonry units have shown that

greater strengths have been possible with air-entraining cement. A sample test made by a Virginia testing

(Continued on page 120)



Ready mixed concrete batching plant. Note screw conveyor for unloading bulk cement, and bucket elevator to move aggregates from stockpiles into plant bins



Left to right: J. R. Pennell, president; F. M. Cheatham, superintendent; and S. H. Gailman, foreman of the plant

Diversify

To open up new markets for aggregates, John B. Lagarde, Anniston, Ala., installs concrete products and ready mixed concrete plants

By H. E. SWANSON



General view of concrete block plant with bins of ready mixed concrete plant in background

Developing New Markets

COMBINING ready mixed concrete and concrete masonry manufacturing operations with an established sand and gravel business, has provided an additional aggregates outlet for John B. Lagarde, Anniston, Ala. Mr. Lagarde started in business in 1929 with a small ready mixed concrete plant. In 1937, he began exploitation of sand and gravel at a pit near Anniston. That operation was described in the July issue of *Rock Products*, page 62.

The year following the opening of the sand and gravel plant, he moved

his ready mixed concrete plant to the Anniston location, and the concrete masonry unit plant was also built here the same year. In 1941, a new building to house the concrete block machinery was built, and in 1944 a new office building and ready mixed concrete plant was constructed.

A feature of the new plant is that the aggregates delivered to the plant are taken over a ramp which inclines up over the new office building. As shown in one of the illustrations, the plant is located at one end of the building with a 150-ft.

ramp rising at a 12 degree angle giving access to it. Advantage was taken of the terrace in the construction of this new building since no special grading was necessary. The building was constructed right into the side of a hill and trucks taking aggregates from the nearby sand and gravel plant can back up the ramp to the ready mixed concrete plant. The ramp has a load-bearing capacity of 16 tons.

The second floor of the building is composed of offices and storerooms and the lower floor contains washrooms and locker rooms for the employees. The building was constructed of block and precast joists which were made at the plant, and the regular crew employed did the construction work.

Ready Mix Operations

Aggregates for the ready mixed concrete operations, delivered by trucks over the ramp, are dumped over a grizzly into bins. The grizzly is made of 1½-in. iron rails spaced at 3-in. centers, and the main function is to catch large stone and foreign material. The aggregates drop into three 50-ton capacity Heltzel bins; a fourth compartment holds 225 bbl. of cement which is weighed out by weigh batchers. As will be noted in one of the illustrations, just in advance of the grizzly is a 12- x 18-in. opening, through which bulk cement is sent to a 250-ton capacity concrete storage bin. Cement from this silo is carried by a 6- x 12-in. bucket elevator, 57-ft. centers, to the



Tamper type block machine with a capacity of 360 standard units per hour

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Vibrat

storage bin over scales for batching. Since there is no railroad siding at the plant, the cement must be transported from the siding, which is one mile away. Cement received in bulk cement cars is taken to the plant in a company-built bulk cement truck which has a capacity of five tons. The cement truck, which is mounted on an International D-30 chassis, backs up the ramp and deposits bulk cement through a sleeve into the bin.

Material in the aggregate bins drops into a Heltzel weigh batcher by gravity and bulk cement from a bin compartment is added in the same manner. Water is received from the city supply and is piped into a 40-gal. tank before introduction to the mixer. The water is measured by weight with the tank resting on a Fairbanks-Morse platform scale. Aggregates, cement, and water are sent to a 1-cu. yd. Smith tilting mixer located under the weigh batcher. The mixer, which is powered by a 20-hp. G.E. motor with a V-belt drive, is controlled from the batching floor by an extended lever which obviates the necessity of having an operator on the mixing floor. Delivery from the mixer is to a fleet of six 2-cu. yd. agitators mounted on 1½-ton Ford trucks. To help keep clean the delivery chute from the weigh batcher to the mixer, a 60-amp., 110-volt Syntrol vibrator has been utilized. The vibrator is attached to the chute and is also controlled from the batching floor.

Concrete Masonry Plant

Aggregates for the masonry unit plant are delivered by truck and deposited into a 5-cu. yd. hopper below ground level which feeds material to an 18-in. belt conveyor, 6-ft. centers, for delivery to the boot of a 14-in. bucket elevator, 55-ft. centers. The



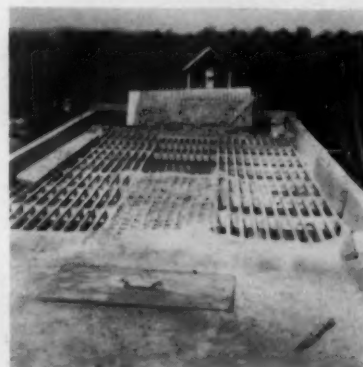
Ramp to ready mixed concrete batching bins is supported over office building. Aggregates bucket elevator to block plant shown in the background

elevator discharges to a swivel chute, controlled from the ground, which sends the aggregates to a two-compartment bin, with a total capacity of 70 cu. yd. Aggregates drop from the bin by gravity to a 1-cu. yd. Blaw-Knox weigh-batcher equipped with two-beam scales. Weighed aggregates from the weigh-batcher discharge to a 1-cu. yd. mixer where bagged cement is added. The mixer, on the second floor of the building, deposits the concrete by gravity to the hopper of the block machine on the ground floor. From the block machine hopper, or material box, the concrete moves by short belt conveyor, which is a part of the machine, to the mold box. The block machine, company-built, will make 360 standard units per hour in a one-block operation.

Block are removed from the machine by manual off-bearer and placed on 50-block capacity steel racks which are taken to steam curing rooms by four Plimp manual lift trucks. Block are cured in three cur-

ing rooms, each with a capacity of 900 block. Steam, generated by a 15-hp. upright, coal-fed boiler, at 8 p.s.i., flows through a 2-in. pipe to the

(Continued on page 120)



Dumping grizzly over batching bins. Cover in foreground is for bulk cement



Vibrating type joist machine. To the left may be seen door operating mechanism of curing rooms



Ready mixed concrete plant adjoining main office building. Concrete structure, to the right, is bulk cement bin

Cinder Crushing

Produce Ready Mix and Concrete Block

H. T. Ferron, Charlottesville, Va., to install larger crushing equipment, a bulk cement system and an additional block machine



Left to right: H. T. Ferron, owner; N. O. Wade, Volunteer Portland Cement Co.; and J. W. Hudson, superintendent

H. T. FERRON, Charlottesville, Va., is expanding and modernizing his plant to increase production of cinder concrete units. Storage capacity for uncrushed cinders has been increased from 15 cu.yd. to 45 cu.yd. and for crushed cinders from 40 cu. yd. to 165 cu.yd. Wooden curing rooms have been rebuilt with cinder block to provide more efficient curing facilities.

Other changes and additions to be made in the near future include larger crushing equipment, a bulk cement system, an additional block machine to augment the two now in service, and additional lift trucks.

Plant operation is that of a typical small masonry unit plant. Cinders are received by truck and rail and are either stockpiled or deposited into an underground hopper for delivery to the cinder crushing equipment. Cinders from the hopper are taken by a bucket elevator to a surge bin above a No. 23B New Holland hammermill and 10- x 16-in. New Holland rolls placed in series. Crushed cinders are

taken to a storage bin by bucket elevator, then sent by gravity to Stearns mixers above No. 7 and No. 9 Stearns Joltcrete block machines.

Finished block are taken to curing rooms by Barrett-Craven lift trucks where they are steam cured over night. They are removed to an outside storage yard by the same lift trucks.

At present, production capacity is 7000 standard units per day, 50 percent sold to the local farm market and the balance to building contractors and other sources.

H. T. Ferron is the owner of the company and J. W. Hudson is superintendent.

"Die-Casting" Block

STRAWN ENGINEERING CO., Escondido, Calif., has developed a machine which, according to the report, "die-casts" concrete masonry units. Raymond W. Strawn, president of the company, has interested several San Diego, Calif., industrialists in the machine and method of manufactur-

ing concrete block. Plans are under consideration to make the machinery in San Diego, and also to produce the block.

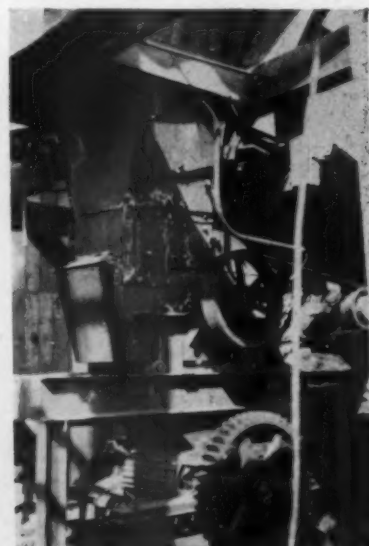
"Backyard" Block

SAN DIEGO, Calif., OPA officials are taking steps to "crackdown" against persons making concrete block in vacant lots, backyards and garages. Most of these individuals are selling block without OPA approval of their ceiling prices, and the products, it is reported, are of poor quality.

Making Concrete Block

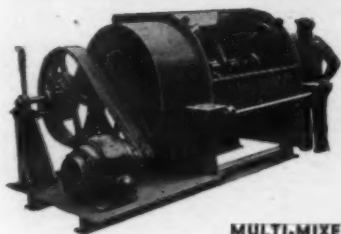
M. J. WALLRICH LAND AND LUMBER Co., Shawano, Wis., building material supply concern, has started the production of concrete masonry units. Curing facilities and other equipment will be added to the recently installed block machine which has a production of 1,000 units per day. William Gruner is manager.

Below: Ready mixed concrete batching plant in center foreground. Note long gate control levers at side of batching bin. Cement storage building to the left. The block plant is in background and to the right. Bucket elevator to top of cinder crushing plant bins may be seen to the right



Above: Present cinder crushing arrangement. Cinders are fed from hopper to hammermill, the throughs going to the 10- x 36-in. rolls, below

MULTIPLEX BLOCK-MAKERS FOR LARGE VOLUME PRODUCTION



MULTI-MIXER

... with reverse screw-type action insures fast and thorough mixing of every batch. This is the machine for an "assembly line" uniform product at all times. Sizes 5 to 60 cu. ft. and larger.

THE MULTIPLEX COMBINATION

- Beauty in Block
- Low Cost Production
- Simple Operation

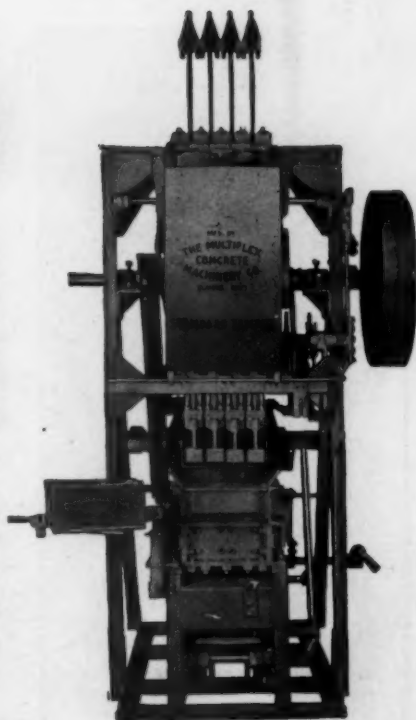
MULTIPLEX STANDARD TAMPERS

Every mechanical improvement has been built into the rugged, compact Multiplex Standard Tamber to insure production of quality blocks.

With fewer parts than any other tamber, its proper balance and freedom from vibration minimizes operating troubles. There are no chains, sprockets, or clutches to replace.

The Multiplex 8-bar Standard Tamber produces from three to four 8x8x16 in. units a minute—can be used for making plain and stripper, or face blocks on one base. Time feeding while tamping and hopper agitation account for better units. The strike-off hopper assures a smooth top. The Multiplex Standard Tamber has a rugged all-steel welded frame and reinforced moldbox.

Write for complete details on this rugged block-maker.



**MULTIPLEX CONCRETE
MACHINERY**
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Here's the most economical way to build attractive concrete masonry walls. Emphasize the horizontal joints by making them concave with a jointing tool. Cut the vertical joints flush and tight to subdue them. Then finish with portland cement paint and you have an attractive, weathertight wall, a credit to the contractor.

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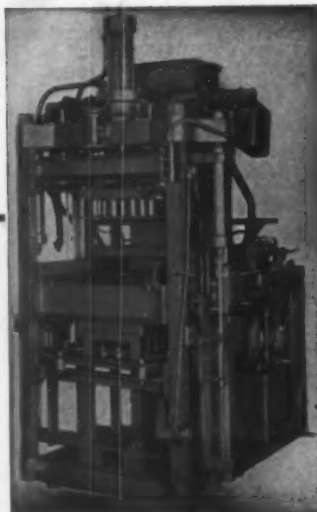
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The Hydraulic Power BLOCK MAKER

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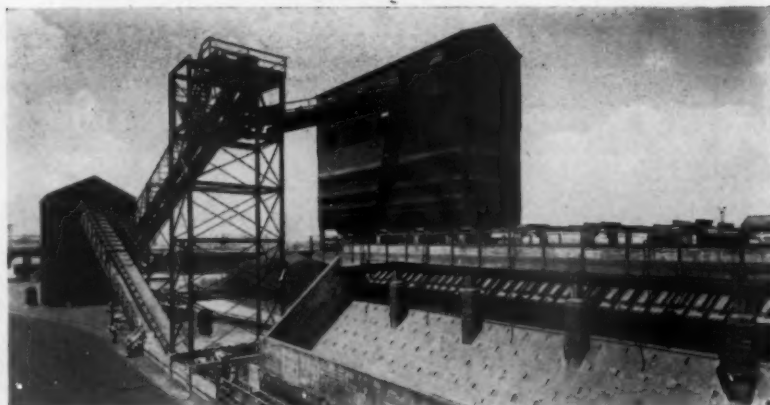


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This patented Dunker keeps pallets in prime condition at all times. Just hang the pallets on the pins and as they are taken off for use the spider rotates by gravity passing the pallets through the tank. You can use discarded crank case oil from your trucks in the Dunker tank.

The KENT MACHINE CO.

Cuyahoga Falls, Ohio



Overall view of the expanded slag plant for the manufacture of lightweight aggregate. In the illustration may be seen the crusherhouse conveyor system, delivery bin and classifier deck

Start Production of Lightweight Aggregate

ANNOUNCEMENT has been made by The Celotex Corporation that production of lightweight Celocrete aggregate has been started at a recently opened expanded slag plant at South Chicago.

The plant is conveniently located at the Republic Steel Corporation's works to take care of an increasing demand for lightweight aggregate for concrete construction in the midwest states.

Expanded slag, of which Celocrete aggregate is composed, is manufactured in this new plant by modern methods and equipment; crusher, screens and expanding machine are all of the very latest type. The plant itself is said to be the largest of its kind in the United States.

The South Chicago plant brings the total number of Celocrete manufacturing units to five. Other plants are located at Cleveland, Buffalo,

Pittsburgh and Troy, N. Y., and the building of still others is contemplated as conditions permit. Shipment from the South Chicago unit can be made by rail or highway. Storage facilities are available for about 30 carloads of finished material in covered bins.

Concrete Products Exhibit for Veterans' Housing

THROUGH the combined effort of the Portland Cement Association and the Rochester Concrete Products Association, Rochester, N. Y., the concrete masonry manufacturers have set up the very attractive exhibit shown in the illustration as part of a building materials display in the Rochester Savings Bank. The idea back of this display was to offer assistance to returning service men and women and war workers who planned to build homes.

Participants in the concrete masonry exhibit were the Comac Build-

(Continued on page 120)



Panel erected by concrete masonry manufacturers of Rochester, N. Y., to stimulate home building and promote the concrete house

The APPLEY "LITTLE GIANT"

A SUPERIOR VIBRATOR
for only **\$995⁰⁰** F.O.B. FACTORY

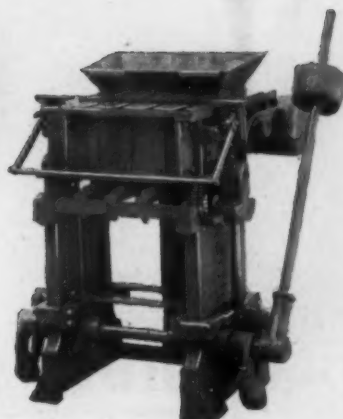
So economical is this machine in operation . . . of such uniform high quality is the block made on it, that manufacturer after manufacturer who started out with one unit is adding two, three and four more.

The Little Giant is a low-priced vibrating machine that moulds perfectly cut blocks of maximum strength and density. Vibration is applied to the mould box while cores remain stationary, thus producing a superior block with square true corners and a smooth face.

This is the block machine you want to investigate. Write today for descriptive literature.

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Repair parts for Anchor, Ideal, Universal, Stearns, Blystone mixers and others.

Anchor Concrete Mch. Co.

1191 Fairview Ave., Columbus 8, Ohio

Products Exhibit

(Continued from page 118)

ers' Supply Corporation, Domine Builders Supply Co., Inc., and the Concrete and Cinder Block Products Co. The panel was erected with cinder concrete block laid in course ashler pattern of alternating courses of 4-in. and 8-in. high units. Lintels are of precast cinder concrete and the sills are of cut cast stone. Walls were painted with two applications of a portland cement plant.

Material Handling

(Continued from page 113)

laboratory on a standard 8- x 8- x 16-in. block made with regular cement shows a breaking load of 173,000 lb. and a compressive unit strength of 1362 lb. per sq. in. A test made on a standard block made with air-entraining cement shows a breaking load of 229,000 lb. and a compressive strength of 1832 lb. per sq. in. Both block were made in the same manner, with the same aggregates and both were tested at 28 days. Other tests have shown approximately the same difference in strengths between block made of regular and air-entraining cement. Other advantages of air-entraining concrete for masonry units claimed by this company are: production of a smoother finished block, ability to

clear the mold box better, will stand vibration better, has greater density, and cuts down on breakage.

J. R. Pennell is president of the Spartanburg Concrete Co., Inc.; W. C. Smith is secretary; F. M. Cheatham is superintendent; and S. H. Gallman is foreman of the block plant. This entire plant was set up in 1940.

Block Production

(Continued from page 115)

rooms. Each room has two 1 1/4-in. pipes running the entire length at floor level. These pipes have 3/16-in. openings spaced at 8-in. centers, to thoroughly steam-cure the units. The rooms have two openings, one for receiving the block and the other for their removal. By opening both ends of the rooms at the conclusion of the overnight-curing period, the draft created clears steam out in a very short time.

Block are removed to the storage yard by the same manual lift trucks. Storage capacity of the yard is about 100,000 units.

In addition to concrete masonry unit production, concrete joists are also made. The joists are made on a steel fabricated machine which vibrates at 3000 vibrations per minute.

John B. Lagarde is the owner of this plant and J. N. Gann is general superintendent.

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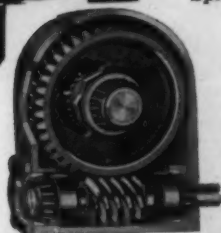
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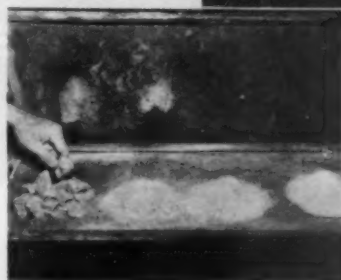
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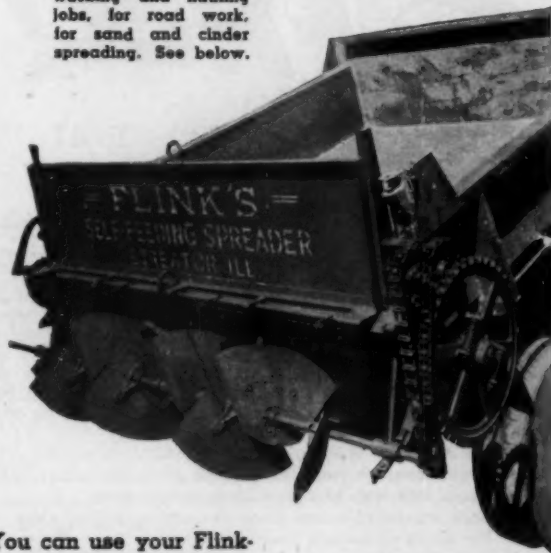
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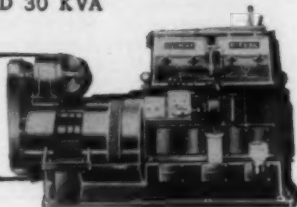
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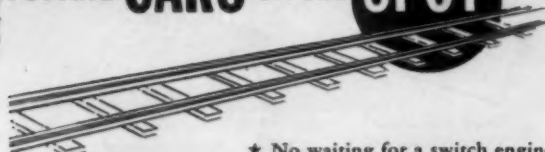
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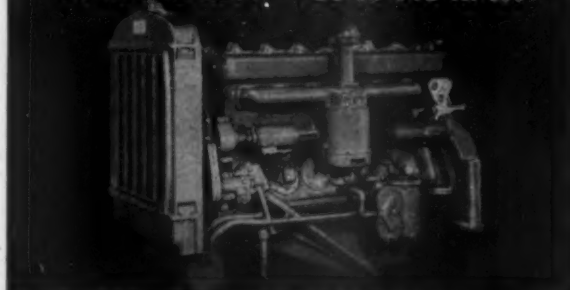


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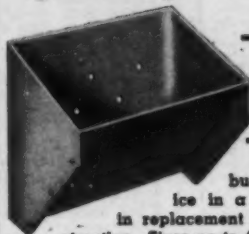


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| 48" | 8 | 1/8" | 1/16" | 20" | 5 | 1/8" | 1/32" |
| 42" | 5 | 1/8" | 1/16" | 20" | 4 | 1/8" | 1/32" |
| 36" | 6 | 1/8" | 1/16" | 18" | 4 | 1/8" | 1/32" |
| 30" | 6 | 1/8" | 1/16" | 16" | 4 | 1/8" | 1/32" |
| 30" | 5 | 1/8" | 1/16" | 14" | 4 | 1/16" | 1/32" |
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| 24" | 4 | 1/8" | 1/32" | | | | |

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|-----------|-----------|-----------|
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| 16" - 6 | 10" - 5 | 5" - 5 |
| 14" - 6 | 8" - 6 | 4" - 5 |
| 12" - 6 | 8" - 5 | 4" - 4 |
| 12" - 5 | 6" - 6 | 3" - 4 |

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Steel balls, 2" down, 8 tons.

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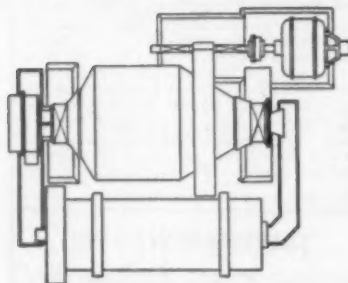
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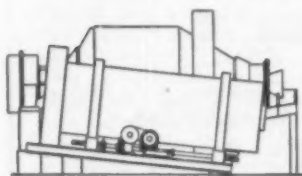
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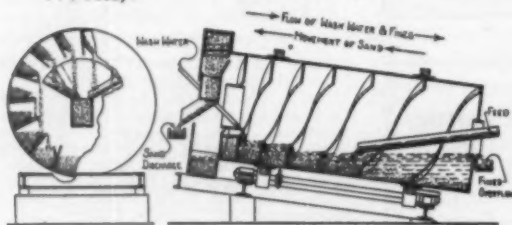
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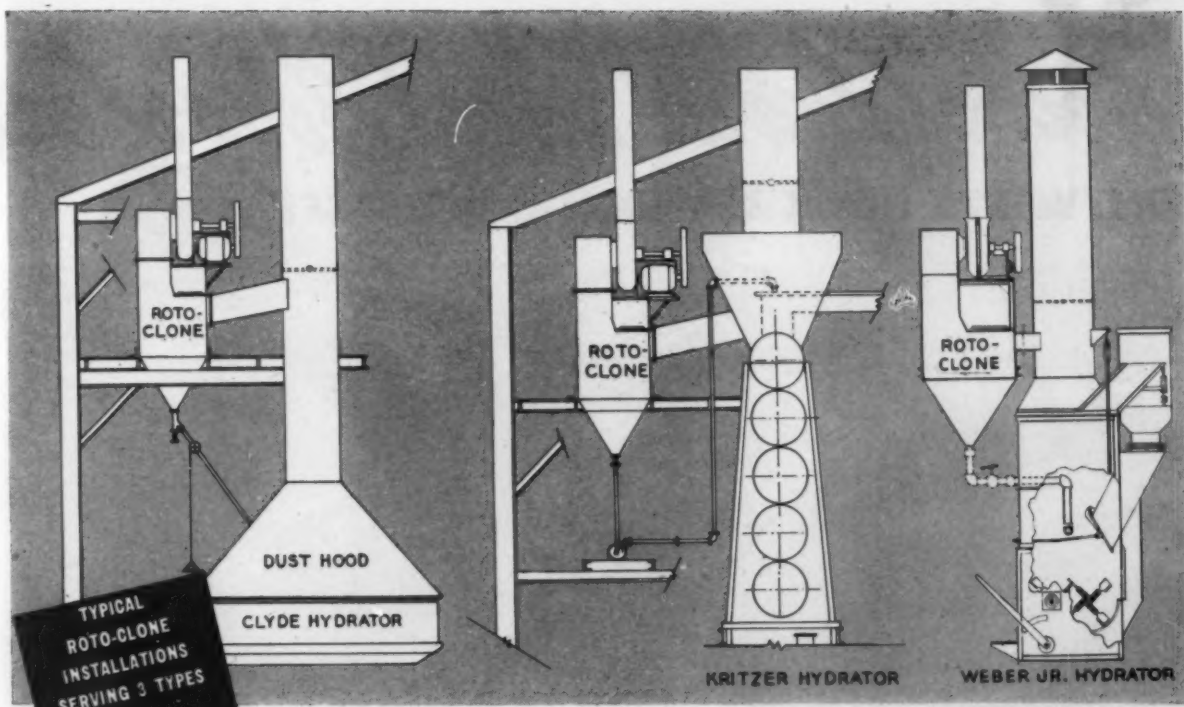
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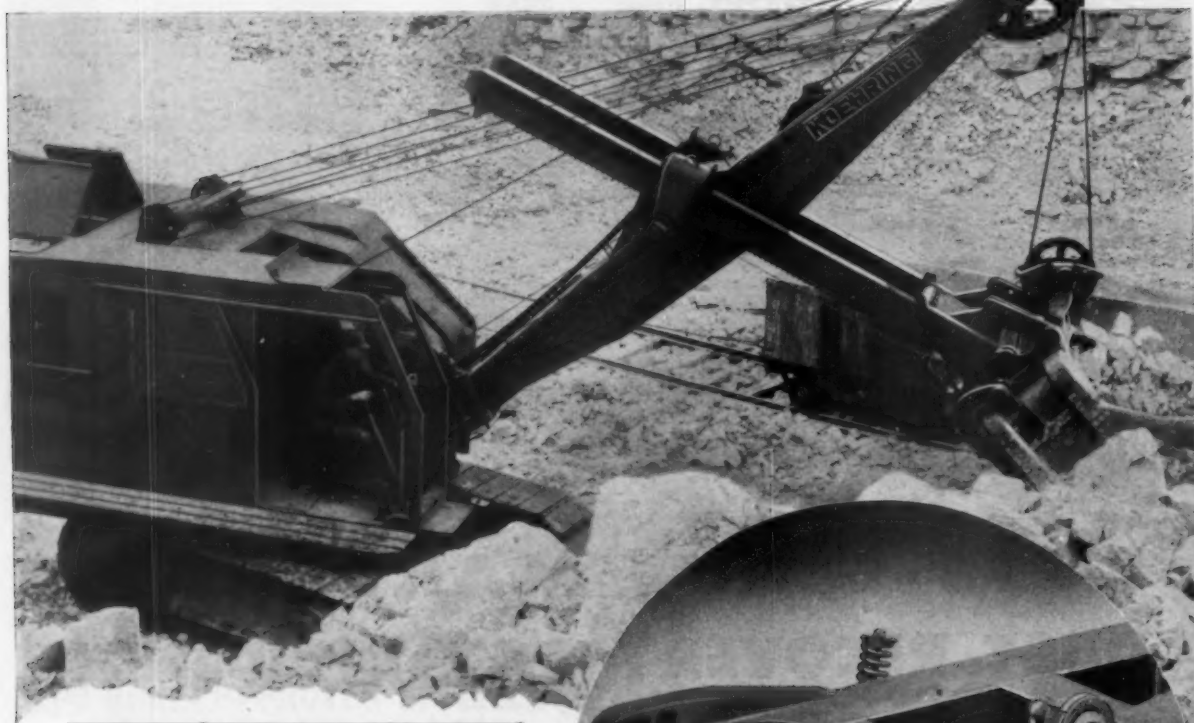
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